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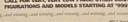
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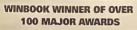












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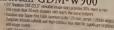
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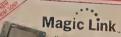


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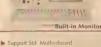


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He founded infoWorld, was founding host of PBS' Computer Chronides, founding editor of Dr. Dobb's Journal, served half a decade on the Board of Directors of Autodesk, Inc., and has chaired various computer and mathematics organizations. Warren has received the John Dyorak Lifetime Achievement Award (1995). Hugh M. Helner First Amendment Award (1994), James Madison Freedom-of-Information Award from the Society of Professional Journalists—Northern California (1994) and Electronic Frontier Foundation Pioneer Award in (1992, its first year).



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MICROTIMES - JUNE 25, 1997 15

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	MINISTRA
	Intel Triton III Motherboard
100	Cache Pipeline 256KB
	32M8 IIIMM FOO 72 B:-
	1 44MB 3.5" Floppy Drive
3	Tower Case (2-5, 24, 2-3.5,2-Hard Drive Bay)
	Hard Disk E/IDE 2GB
ш	2MB Diamond Streets an
120	Bit Windows RAM II Upgradable to 8MB
_	Full Screen MPEG, CDI, Video CD Playback Softwar
-	15" NI 28 Dot Pitch Flat SVGA Mondor
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0	WIN 95 Enhanced Keyboard
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1	16X IDE CD-ROM Drive
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MULTIMEDIA PRO SYSTEM I

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-	Intel Triton III Motherboard	
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Ξ.	Mini-Tower Case	
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	Hard Disk E/IDE 1 2GB	
ч	IMB Video PCI DRAM	
1	14" NI 28 Monitor	
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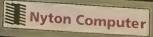
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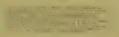
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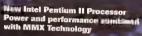
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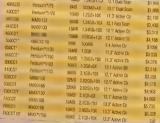


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BY PAUL HOFFMAN

Industry Insights

Price Realities Come (Slowly) To The Internet

It's wonderful

to be writing about the Internet so often these days. Fifteen years ago, when we wrote about "computers," we could be talking about mainframes, minicomputers (remember them?), or the new-fangled "personal computers" that were just starting to get noticed in the mainstream. The word "computer" was overly broad, and therefore let writers talk about almost anything. Today, the word "Internet" lets us do the same thing, since it mimpossible to precisely define what the Internet is,

Because defining the Internet is so hard, it is also difficult to say whether a particular event that affects the Internet will "hurt" it or "save" it. This month's case in point: The trend, started by Internet backbone provider UUNET Technologies, to charge smaller Internet providers connecting fees. Some people saw this the beginning of the end for the Internet, which would end up being less than universal;

others saw this as the healthiest thing that could happen, making everyone more responsible for the amount of traffic they generate.

The issues here are fairly US-centric, because the US has much more competition in its Internet market than other countries. In fact, in many countries, in order m become an Internet Service Provider (ISP), you have to go through a heavy bureaucratic process with the government or the national telephone company; in return, that agency takes care of all the inter-ISP connections. However, as more and more countries start following the US model (for better or worse), they will confront the same large-scale Internet issues we are seeing today.

While Is Your Peer?

The problem UUNet brought to a head is known as "peering fees."

The Internet is made up of thousands of segments, all privately owned. The points where two segments connect are controlled by routers.

It is difficult to say whether a particular event that affects the Internet will "hurt" it or "save" it. This month's case in point:

The trend, stared by Internet backbone provider UUNET Technologies, to charge smaller Internet providers connecting fees. 20 MICROTIMES - JUNE 25, 1907

Many of the connection points connect segments from two different companies, and the routers must be able to determine the best way to move data from one company's lines to the other. Even when the Internet was basically a US government-owned system, routers performed the same tasks.

Until recently, the large companies that own the long-haul segments an the central part of the Internet let smaller companies set up routers to exchange data for free. The reasoning was that the customers of the large companies wanted access to the data of the small companies just as much as the customers of the small companies wanted their data to travel easily and quickly to the large company's network. This passing of packets (messages) at one point is called "peering" because, in the old days, everyone was essentially a peer of each other, and the large companies weren't all that much different from the small ones

This whole arrangement may sound a bit odd because you would think that each network would have to peer with every other network. In the old days of the Internet, that was exactly what happened. However, as some players grew faster than others, the largest networks allowed smaller networks to pay them to move their data out over the Internet and, at the same time, do all the peering arrangements. This meant that peering was less complicated than it might be, and helped make the Internet more efficient at the same time.



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Transit Costs

Peering is simply the exchange of packets, not an agreement to take them any further than the next hop on their pourney. If you're on network A, and you want to get a packet to network C, you have two options. Directly peer with C, or

have an agreement with some other network. B. Earry your packets from you to C. Having, someone else carry your packets for you a called 'transiting,' and it is the business gluethat holds the Internet together Almost all transiting agreements in the US are "completed".

arrangements, meaning that network B agrees to take all packets from network A, not just packets destined for a few particular networks, and deliver them

Transit agreements also include service agreements. The network transiting your data also agrees to maintain the hardware needed for getting the data to you and from you. For many years, the service part of the agreements was pretty much taken for grouned, but as the internet has become more and more complex, it has become harder for the large backbone, in the provide the same level of service for the same price. For example, it is getting much harder for anyone to find technicians who understand how to configure and maintain today's routers; most of the people who could learn this kind of arcane knowledge already are working in the field.



Which brings us back to the problem that UUNET finally decided an address Because the Internet is a mesh of interconnections, there are lots of ways to route packets, which unfortunately means that there are lots of ways to do it wrong. Proper peering helps makes the Internet more efficient because it helps move the packets from a place to another with the least number of "hops" between routers if you think of the Internet as wires connected by routers, you'll see that it's not the wires that slow down a packet, it's going through too many routers.

UUNET and the other major backbone providers had allowed free peering, even to small networks, mostly because free peering had always just been the way that things happened About two months ago, there were rumors that UUNET was not renewing its free peering agreements, and there was a great deal of fear that without free peering, the Internet would fall apart. The logic was that if small regional networks had to pay for peering with everyone else, the costs would be prohibitive.

After the rumors spread to the press, UNNET then made an announcement that the rumors were true, and other major backhone carners also started to review their free peering arrangements. UNNET emphasized that it was still willing to make peering arrangements with small networks, just not free ones UUNET also emphasized that it was still making free peering arrangements with large networks that UUNET arrangements with large networks that UUNET.





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Industry Insights continued

considers its peers, namely those with national backbones and many interconnection points.

The concerns about the end of free peering are probably overblown, since peering is only one way to connect—there's always transit agreements. In fact, although transit agreements are more expensive than what UUNET wants to charge for peering with small providers, transit agreements give small networks much more service Because a transit agreement says that UUNET (or any other large network) will take all of the packets and do all of the routing for them, smaller networks actually have less service they have to provide their customers

It is clear, however, that smaller networks will probably have to pay more in the future for their connection to the rest of the Internet They will either have to pay multiple peering charges, or pay more for their transiting. These costs, of course, will have to be passed on to their users, who and often smaller ISPs and businesses. However, these costs should not be all that much, and may even result in better Internet connectivity for everyone as people start to pay for what they actually use.

The "S" in ISP Should Really Memi Service

Much of the problem with today's Internet is that people are unclear about what they are paying for End users often think that they are paying for access to content, not for service. They go with ISPs who, in fact, don't give very good service, and therefore can charge very little. The major backbone providers found that the free peering was often not very useful because they were providing a lot of service to ISPs who were clucless about what they were doing

ISPs who am more service-oriented discovered a few years ago that the best way to provide high-quality connectivity for their customers was to have more than one transit agreement with backbone providers. That way, when one provider was down or having technical problems, their packets still made it to the Internet, albeit usually much more slowly. Having more than one transit provider takes some advanced technical expertise, but # gives the users much better, and more reliable, service.

The internet, then, in becoming more and more like the PC business. You can go to a computer dealer and buy a cheap computer without caring much about the parts inside of it a about how good the dealer's service is, and you might be fine. On the other hand, if the dealer sells computers with more reliable parts, which were probably more expensive than the lowest-end parts, you are less likely to need service from the dealer, and when you do, the dealer may be better able to determine the problem quickly.

Some people only want to buy from "the top of the ladder," and they often do this by buying computers direct from the largest manufacturers and Internet service direct from the backbone providers However, being a tiny customer from a top-tier provider may octually get you less service (and certainly cost more) than buying from a quality reseller. Small and medium-sized networks are discovering this as they have in refigure their costs of connecting in the core internet and determine how they will spread those costs their customers. Copyright © 1997 by Paul Hoffman. All rights reserved.

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- 16x EIDE CD-ROM • 32 bit sound card
- . 60W amp, speakers - 104 key Win95 keyboard
- Serial Mouse



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MEMORY HARD DRIVES





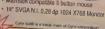
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añ 99 99	WESTERN DIGITAL	WDAC11200 WDAC21600 WDAC22100 WDAC32500 WDAC33100 WDAC23400	12 GB 16 GB 21 G8 2.5 GB 31 GB 40 GB	11 mS 11 mS 11 mS 11 mS 11 mS 11 mS	128k 128k 128k 128k 128k	3 years 8 years 3 years 3 years 3 years 3 years	\$164.90 \$174.90 \$194.90 \$209.90 \$229.90 \$229.4
	IBM	DAQA32160 DAQA32700 DAQA33240 DJAQA34300	2.1 GB 2.7 GB 3.24 GB 4.3 GB	95 mS 95 mS 95 mS 95 mS	128k 128k 128k 128k	3 years 3 years 3 years 2 years	\$189 99 \$204 99 \$219.99 \$314 99

MULTIMEDIA

Creative Labs 19 in PnP \$44 99 Creative Labs SB 32 PnP \$75 99 Creative Labs AWE 64 (retail) \$149 99 Creative Labs AWE in Gold \$179 99 12X FIDE CD \$69 99 16X EIDE CD ROM \$74 99	Panasord: EIDE 24X CD ROM 5109% Toshiba 12X EIDE CD ROM 5416% Toshiba 12X EIDE CD 5109% Toshiba 5701 B SCSI II 12X CD ROM 5139 39 Varmaha CDR 400C 445 w/ SCSI card 5799 99 HP Surestor 60201 (2x5) 43399

Multimedia Systems

- · Intel Triton II 430VX Chipset
- · Motherboard w/ 256k pipeline cache, SUPPORTS EDO RAM
- 16 MB EDO RAM expandable to 128 MB.
- · 2.0 EIDE mode 4 hard drive,
- · Built-in EIDE controller
- supports four HDDs & two FDDs 2 Hi-speed serial ports, 1 enhanced parallel port,
- 1.44 MIII floppy disk drive
- · Diamond Stealth 64 PCI Video Card
- W/ 2MB DRAM
- 16X EIDE CD ROM, 16 bit sound card
- 60W Amplified Speakers
- · Defuxe Mid-Tower Case
- w/ 230W power supply
- · 104 Win95 keyboard,
- · Microsoft compatible il button mouse





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VX Pro chipset Motherboard w/ S12k pipeline burst cache EIDE controller supports up to # HDDs, 2 FDDs, 25/1P 8 MB EDO RAM

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Pentium 200

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GENERIC MONITORS

w.512K Pipeline Burst Cache

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Pentium 150 MH

Pentium 166 MHz

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AMD K5-PR166

AMD X6-P166 MMX

C) TIX 6)(86-P166+ Pentum Pro 200 w/ Natoma 440FX

single processor

dual processor -

CPU not included

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SVGA 15" 28 NI

AMD K6-P200 MMX. . .

Pentium 200 MHz314 99

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nvestors bumped up stocks last month, after learning that the Federal Reserve was not planning on increasing interest rates. The MicroTimes Stock Index followed the national indices into higher territory, rising 112.76 points, or 1.24%, to an all-time high of 9223.00 Advancers outmatched decliners by a 23 to 16 count, while companies achieving new highs towered over those reaching new lows by 12 = 0.

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Intel 6-

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Similarly, the Dow Jones Industrial Average continued its northbound climb, increasing 168.67 points, or 2.36%, to a close of 7305.29.

Turning To Companies In The Spotlight

Xerox helped push our index to higher ground in last months' trading. Standard III Poor's affirmed its rating on the company, after Xerox announced its agreement III acquire the remaining minority interest in Rank Xerox from the Rank Group for 940 million British pounds (approximately \$1.5 billion). Xerox shares were up \$3.00, or 4.72%, to a close of \$53.50.

Netcom's stock price climbed last month, amid speculation of a merger. Intermedial Communications said it would buy Digex, Inc., which fueled the fire of speculation about more industry consolidation. Consequently, shares of Netcom rose \$1.75, or, 12.96%, to close at \$15.25.

Intel did not fair as well in last month's trading. Demand in Europe unexpectedly weakened,
without showing signs that competitors were
gaining market share there. A spokesman for the
company, Heiner Genzken, said the company
doesn't know why demand softened. In response,
Intel slid \$15.63, or 9.84%, to end the period at
\$143.13.

Shares of AT&T rallied last month, after chairman Robert Allen announced at the annual meeting that boosting the company's stock price is his top priority. In response, the stock rose \$3.00, or 9.23%, to II close of \$35.50. It was an encouraging start to bringing the value of the stock back up to the \$45 per share that it closed at a year ago.

28 MICROTIMES - JUNE 25, 1927

Pentium^o Package

MNIX Multimedia

Intel 64-Bit Microprocessor

512K Pipeline Cache, Plug III Play

1.6GB FITE Mode-4 Hard Disk

64-Bit S3 Virge 3D Windows

Accelerator MPEG 2MB

(Full Screen Playback)

Intel 430VX PCI Set

L44MB Floppy Drive

16MB EDO RAM

Intel 64-Bit Microprocessor Intel 430 X PCI Set 512K Pipeline Cache, Plug & Play 1.44MB Floppy Drite 16MB EDO RAM 1.6GB EIDE Mode-4 Hard Disk 64-Bit S3 Virge 3D Windows Accelerator MPEC 2/MRFull Screen

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15" Digital Non-Interlaced 28mm Monitor 12-Speed IDE CD ROM 16-Bit 3D Stereo Sound Full Duplex Pap 180W Mullimedia Speakers 104-Key Enhanced Keyboard Hi-Resolution Mouse 5-Bay Tower Case

15"Digital Non-Interlaced

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Duplex PnP

Pentium [®]	1.20MHz				1865
Pentium	133MHz				1895
Pentium					
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Penkon II MMX 15" Digital Non-Interlaced

Intel Pentium* II MMX Microprocessor 11 PA40FX PCI Set 512K L.Z Cache, Plug & Play 1.44 MB Floppy Drive 32MB EDO RAM Western Digital 3.1 GB EIDE Mode-4 Hard Disk Matrox Mystigue 3D PCI MPEG 2MB SCRAM (Full Screen Playback)

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Logitech Serial Mouse
7-Bay Tower Case

28mm Monitor

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REALIZABLE FANTASIES . BY JIM WARREN

Government For Sale!

...For Those Wealthy Enough To Buy It

It's us against them, and we're losin'-big-time!

"Us": the average citizen-victims of California, and the businesses that aren't big enough to buy special treatment Businesses .. those cvil, job-producing, tax-paying operations that try to produce products and services if they have any spare time after fulfilling endless regulations and demands in this anti-business state. (If you don't believe it's a nightmare, just try risking your life's savings to open a business with offices, equipment and employees in this state.)

Them": the Forces of Darkness The buckshustling bureaucrats who can never find enough money to spend; the pugnacious public-employee unions who say to hell with the public's interests; the posterior-protecting politicians who fear that citizens might actually find out what they're doing, and the wealthy. special interests who buy their votes

At issue this month is the unending battle for modern (electronic) and equal public access to modern (computerized) public records, public information that local and state agencies create or collect from us at the point of a gun lunder force of law), computerize for their internal convenience and cost-savings, and maintain to better and more efficiently perform the parts of their mission and goals that they choose to perform--all m significant taxpayer expense.

The Law Ignored

Local and agencies are required by law to provide public provide public to their tax-prepaid public records for public review, and to provide copies of those public records to any requester for no more than "the direct sees of duplication."

Although the California Public Records Act

(CPRA) has required this for decades, few agencies consider it anything more than == inconvenient nuisance, and most bureaucrats or politicians appear in consider it an insignificant element of their mission and goalsexcept, of course, for the information that they

But the first sentence of the CPRA states,

Without timely

information, the

rights to vote,

speak, publish and

petition for redress

of grievances are

an empty pretense

of freedom and

democracy; façade

without substance.

"the Legislature, mindful of the right of individuals to privacy, finds and declares that access to information concerning the conduct of the people's business is a fundamental and necessary right of every person in this state." [§6250, boldface added]

Without timely access to adequate information on which to base sound decisions about the process of our own governance, the rights in vote, speak, publish and pention for redress of grievances are an empty pretense of freedom and democracy; façade without substance

Half A Decade And Still Waiting

In October of 1992-as an public-records electronic-access "expert"-I attended a meeting in Scrappymento that began an effort to build consensus (Hah!-fat chance!) on modernizing the badly-outdated CPRA. The meeting had a broad spectrum of groups represented, although it was convened by two of the state's leading open-government advocates-Tom Newton, legal counsel and lobbyist for the California Newspaper Publishers' Association (CNPA) and Terry Francke, director and lobbyist for the uny-but-

potent California First Amendment Coalition (CFAC). Ted Prim, a career attorney and public records expert from the California Attorney General's office was there-and has proven to be a formidable defender of bureaucracies, against modernizing free or copying-cost public access m public records (details below)

Teachers' union representatives were there,

zealously seeking expanded access to adequate lic's interest in overseeing teachers' quality and performance After all, it "only" concerns the future of our society

(Note: 80% to 90% of educa: tional tax funds-which compose about 50% of the state's total expenses-are paid for salaries and benefits. These massive allocations of public funds are decided almost entirely in secret labor negotiations, with only the final result rubber-stamped in a public meeting.)

There was a meeting several years later, convened for the same purpose under legislative auspices. It began with a belligerent tirade by the union rep for the California Correctional Peace Officers Association against public access to

access to school budget detailsespecially details of any funds they could pursue in their closedshop collective bargaining efforts However, the teacher reps were equally zealous about continuing to prohibit any public access in teacher evaluations or disciplinary hearings against teachers. much less citizen or press access to complaints filed by students or parents against teachers. Gotta protect employee privacy, ya know-and to hell with the pub-

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33 MCROTIMES - JUNE 25, 1987

Views

The Department of Motor Vehicles

sells our personal data for more

than \$45 million per year. That is

why you gave the DMV your

personal information ... isn't it?

Realizable Fantasies continued

prison disciplinary information. When he finished, he stormed out, snarling a final threat, "I've got just one thing to add—CCPOA!"

The CCPOA is one of the largest political donors in the state, and known as one of the most powerful—in the event that you were wondering why our tax-paid prison guards see among the highest-paid law officers in the nation.

Like all other meetings about modernizing the CPRA, this meeting died a quick death

Campaign Finances Still Hiddun In Plain Sight

Through 1995, I served on Secretary of State Bill Iones' Electronic Filings Advisory Panel, which produced recommendations for how to electronically file and provide timely online public access to campaign finance disclosures—currently "available" only in mountains of misfiled paper in far-distant

government offices.

To date, the Panel recommendations have gone nowhere—repeatedly sunk by cop Demopublicans and Republicats alike. Gotta protect the privacy of those shy vote-buyers, ya know.

That endless fight is continuing. Get latest details from Kim Alexander kimalex@netcom.com, executive director and lanitor of the California Voter Foundation (http://livuuw.calvoter.org).

The Latest Farce

Through much of the last year, I've wasted time cuming up to Sacramento as a member Ipro bono, as always] of the California State Senate Task Force on Electronic Access to Public Records, created in 1996 by State Senator Quentin Kopp (Ind.-San Francisco). Same issue. same result, so far.

Originally, I had hopes for this Task Force; kopp used to support robust, public access to our government. But many of us are wondering if he's sold out the principle of modern public access—or has just lost control of his staff. Kopp never attends meetings of his own task force; It's run by his junior aide. Teri Butns

Although it's unclear who is and is not a member of the task force—people wander in and out from one meeting in the next—as far in I can tell. I'm the only citizen member, although a librarianship grad student sometimes attends. That we I'm the only one who is not a pald lobbysit, information peddler, we tax-paid bureaucrat (lobbying for their self-interests, which may or may not match the public's interests.

Much worse I'm one of the few members advocating free or copying-cost-only and to our public records. Most of Kopp's appointees represent self-serving local and state agencies overseen by self-serving politicians.

I snart that they are "self-serving" because—almost without exception—they ame either tenaciously trying to reduce the scope of public access that has been required for decades, and article access that has been required for decades, and article access that has been reduced for decades, and article access to us—if the copies are in self-it, computerized form—at profitering rates far in excess of the traditional "direct cost

of duplication "

Backed by the Attorney General's Ted Prim, they say paper copies fulfill the copy requirement of the CPRA—that online access or digital copies of already-computerized public records are 'enhanced' records.

and "enhanced" access!

1 refuse with have myname any longer associated with this loaded task force and its latest recommendation (as of my June 2nd press deadline), below, so—by copy of this column—I quit.

Modern Access For Those Who Can Buy

The bureaucrats who dominate the task force provided a majority rubber-stamp for the following recommendations (the first two are great; the last one sucks!)

1 Amend Kopp's Senate Bill 74 to delete from the CPRA the major anti-access loophole that says. "Computer data shall be provided in a form to be determined by the agency."

[Good riddance! Bureaucrats have used this for decades, to refuse to provide computer copies of computerized public records!]

2 Add a mandate that, "Agencies shall provide a copy of an electronic record in the format requested, unless. I light of surrounding crecumstances, I is not masonable to do may provide continued to page 16

The higger picture in **PUNCETON**



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Realizable Fantasies continued from page 33

ed that the requested format is one which has been used by the agency in create copies for its use or for provision to other agencies."

[In spite of the dangerously weasely language, we've pleaded that this be required for years!

1. But they also recommended adding the following, demolishing decades of the CPRA's crucial tradition of limiting "copying" fees to "direct cost of duplication"

Electronic copies of records shall be made promptly available upon payment of fees m

"(1) Except when the records are requested for m commercial purpose, electronic copies of records shall be made available upon payment of fees representing the direct cost of duplication or a statutory fee. For purposes of this section, 'commercial purpose' means any use that furthers the commercial, trade, or profit interests of the requester or person whose behalf the request is made."

["Commercial" ISPs, BBSes, CD-ROM publishers, feature magazines, wee-fee public-interest attorneys, and so on, are excluded! I specifically pleaded to at least explicitly include libraries, academic institutions, nonprofit organizations and freelance researchers, and Ted Prim explicitly stonewalled it.

"Commercial purpose does not include any request made by a person who, through contract employment, is a publisher, editor or reporter with a news gathering organization and makes the request in that capacity.

(Approved by the CNPA's board, this = a major reversal of California newspapers' long standing public-recards position. Until now, they have always demanded equal access for all; that the press not be made a privileged class.]

"(2) For requests in which the information is to be used for any commercial purpose, the records shall be made available upon payment of the actual cost of providing the record, which shall include the costs of search, retrieval, review, segregation, and duplication, plus as percent surcharge, or a statutory fee. All funds collected by an agency from

I'm one of the few members of Quentin Kopp's task force advocating free or copying-cost-only access to our public records. Most of Kopp's appointees represent selfserving local and state agencies overseen by self-serving politicians.

the x percent surcharge shall be used by the agence exclusively for the purposes described in section 6253 (that is, for anything in any way related to public-records access—copy machine rentals, buying paper and probably even depreciation on the building that houses the records

This bureaucrats' task force also proposed a Statement-of-Legislative-Intent to clarify 'reasonable" circumstances for disclosure, stating

In interpreting whether disclosure of a copy

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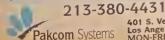
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Realizable Fantasies continued

of a record in an electronic format is reasonable under surrounding en cumstances, we are mindful of the dictionary definitions of the term "reasonable." These definitions consistently indicate that the term was sonable means moderate, inexpensive, fair, suitable under the circum stances, and not excessive. Thus, if disclosure of a copy of a record in electronic form is consistent with these concepts, the agency would be expected make disclosure in that form

"Some examples of circumstances in which it would not be reason able to require compliance with the general rule would include the following situations:

- · Significant reprogramming or the creation of new software would be necessary to fulfill the request; and
- The task of redacting [deleting] or segregating exempt [non-public data] from disclosable material would be unduly burdensome

TE

This creates a monumental loophole, worse than the one they use an the current law Namely, agencies can dodge public-access requirements simply by intimately co-mingling public information with nondisclosable information in a single database. This is already common in agency databases designed without thinking that public access was one of their responsibilities.]

Man Kopp Sold Us Out?

Aside from the pro-profiteering, pro-bureaucracy bias of Kopp's task force, there's also the issue of Governor Wilson's Information Technology czar, CIO John Flynn, Before his appointment was ever confirmed by the Senate, he publicly testified (February 7, 1996) that public records were too valuable to not consider selling them at market rates. (For instance, the Department of Motor Vehicles sells out personal data for more than \$45 million per year. That is why you gave the DMV your personal information...isn't it?)

But after Flynn publicly advocated peddling our public records for profits (they call it "revenue"), mut only did Kopp vote in favor of his confirmation, he sponsored this data-peddler

State's CIO Ignores Senate And The Law

Two years ago, Senate Bill I required that Flynn's Department of Information Technology develop ■ plan by lanuary 1, 1997, for how agencies would provide public access to their already-computerized public records. Six months overdue, Flynn has provided zippo

Kopp chairs the Senate's Select Committee on Information Services in State Government, which should be overseeing this. But our formerly diligent watchdog hasn't raised even a wee-tiny whimper about Flynn's disregard for state law and public access

Please, Quentin, Show Us It Ain't So

By action, show that you still support free and copying-cost-only public access to public records, even in their modern, useful, valuable

Please show us, by action, that you haven't sold us mus to buck-hustling bureaucrats and data profiteers-and fimited modern government access to those who can buy it.

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LAPTOPS . BY ED KAHN

Pen Writing On Your Portable

Handwriter Manta Moves Us Closer To The Earlier Days Of Pen And Paper

Despite all of the

advances in computing, many people still long for the convenience of pen and paper. Typing on a keyboard requires a skill that is an obstacle for many people who feel that they cannot think with the distance a keyboard puts between the brain and the output. Nevertheless, keyboards remain the dominant input device for most laptop users.

Communications Intelligence Corp. hopes to move us closer to the earlier days of pen and paper with Handwriter Manta. The Handwriter consists of a small tablet that weighs about 10 oz., an electronic pen-like device, sophisticated software, and a cable that connects the tablet to the computer through a serial port.

The electronic pen resembles a conventional pen or pencil, but is powered by a couple of truy batteries that will last for hundreds of hours. Writing see the pad transfers your marks to the computer screen. The pen can also work like a mouse You move the pen to wherever you like on the screen. Thus is just like moving the mouse pounter. If you tap the pad with the pen point, it is like clicking the left mouse button. A button on the pen serves in place of the right mouse button. For people who are uncomfortable using a mouse, this is a good alternance.

The package includes a good tutorial and a crossword puzzle program to help you become comfortable with writing on the tablet. While we all know how to write on a tablet of paper, writ-

ing in a way that a computer can understand requires a new set of skills. The Handwriter documentation suggests that the learning curve in easy. They say that a halfhour investment will make you comfortable using the Handwriter Manta. My own expenence was that it took longer to become comfortable with the device

Computers, with all of their power, have a

hard time deciphering handwriting. First, they cannot handle cursive writing they simply cannot tell when one letter ends and another begins. Secondly, even if you print the letters and numbers, the computer has a hard time distinguishing between certain letters and numbers. As a result, the Manta has to teach you how to make the letters so the computer can recognize them.

There several ways of learning this new system. The tutorial offers a number of exercises that will teach you how to make the letters the software will recognize. A second way of becoming facile with the device is to answer a series of questions that are designed to teach the soft-

ware how to recognize the way you make your letters and numbers. In either case, you and the software must learn to communicate before you can write efficiently on the pad.

The crossword puzzle package that comes with the Handwriter Manta helps you become familiar with entering text through the writing pad, which measures about 7" a 8" with a writing surface of a little larger than 4" x 5." Once you become confortable with the Manta system, you can begin to work in other programs. With Microsoft Word, you can install an icon on your roolbar that lets you edit and revise Word documents with Handwriter. You can do the same with a number of other programs. In

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continued on page 44

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Solutions

Laptops continued from

spreadsheet programs, for instance, you can enter numbers directly into the cells with the electronic pen.

There are other things you can do with this device, like add your signature to letters, but for the most part. I found that the benefits of Handwriter Manta were outweighed by the awkwardness of carrying around another piece of equipment. The advertising suggests that it is easier to work on the tablet than on a keyboard when you are on an arplane. I found from personal experience that it is virtually impossible.

to use this device on a plane unless you are in first class. There is simply not enough room to set up your computer and put the Manta anywhere except inside your shirt.

As I worked with the Handwriter, I kept reminding myself that because I actually like keyboards I should be careful to not be too harsh on this system. In the end I had to admit that there is a real need for Handwriter Manta for people who have wrist problems. If you suffer from tendonitis or other repetitive stress injuries, this product could be a real godsend.

I see this **a** a specialized product that fils a need and does it well, but I do not see this as something that belongs on every desk. Keyboards are simply too efficient to be supplemented by this pad unless you have special needs

M

The Handwriter Manta works with either Windows 3.1 or Windows 95.0 With Windows 95.0 Tequies all least 20MB of hard drive space and at least 8MB of RAM. The software comes on three Roppy disks, alleviating the need for a CD-ROM drive just to get the system up and trunning. The product comes with a one-year warranty.

There is a real need for Handwriter Manta for people who have wrist problems. If you suffer from tendonitis or other repetitive stress injuries, this product could be a real godsend.

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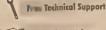
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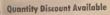
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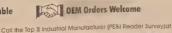


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Computer Of The Month

Digital Equipment's HiNote VP 500

Digital Equipment

Corp., once one of the top companies in the computer world, was slow to enter the laptop field. Earlier, after introducing several spectacular models, they decided to exit the market. Now they we have two hands the world with the most powerful notebooks available today.

The HiNote 500 series is available in three configurations with prices ranging from \$2,499 up to \$4,499 for the top-of-the-line model 575. All three models come standard with 16MB of RAM, expandable up to 80MB, and have a 12.1° display The HiNote VP 575 is powered by a Pentium 166MHz chip with MMX technology.

Digital incorporated innovative design features into the HiNote series. For example, the expansion bay on the side of the computer has a drive module that includes both I 44MB floppy and IZX CD-ROM drives. Most of the competing notebooks require you to choose between these two drives. Digital's approach lets you always have both drives available. In these days of software increasingly coming on CD-ROMs, H is an added convenience to have both drives available all the time

The module that holds the drives is easily

replaced with a second battery pack (\$279) With improved circuitry and battery technology, by using two batpower a notebook for up in ten hours. In the most expensive HiNote notebook, Digital uses a Lithium Ion battery rather than the Nickel Metal Hydride battery found in the lower-end models. Lithium Ion technology provides more power for the

weight and does not suffer from memory effect. Memory effect reduces the duration of a battery's charge if you consistently recharge when the battery is not fully depleted. In other words, if you run the battery for an hour and then recharge, over time the battery will remember that is only has to run for an hour. While the condition can be reversed, it is an annoyance.

Hard drive configurations range from a 1.44GB all the way up to a huge 2.16GB drive.



Like much of the rest of this computer, these drives are removable and can be replaced if they fall or with larger drives if needed.

Digital has made it easy to attach an external monitor and gives you the option of viewing the built-in display, the external monitor, or both Since many people attach an assortment of peripherals as their notebook at their primary work location. Digital designed the HiNote so that everything will continue running even after you close the top. But in normal mode, with the top closed, the computer goes into a suspend mode, letting you stop in the middle of an application and return to where you left off simply by opening the top.

The keyboard is well-designed and easy to use. There is a TouchPad in lieu of a mouse. If you prefer a mouse, you will need to connect it through the serial port. There is a PS/2 port that could be used by the mouse, but you will probably want to reserve that for an external keyboard.

The HiNote has two PC Card slots that let

The HiNote 500 series is available in three configurations with prices ranging from \$2,499 up to \$4,499 for the top-of-the-line model 575.

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Laptops continued

you was either a single Type III card or up to two Type I or II cards. Once again, Digital has used the newest and most powerful technology for these slots. They utilize the new CardBus standard that lets information flow much more rapidly than the older standard. In addition, the slots are set up for Zoomed video, which lets you see full motion video if you use a Zoomed video card

As with most new notebooks, high-speed infrared transfer of files is accommodated through the serial infrared sender and receiver on the back of the computer Most new notebooks have only one serial port, but with the PC Card slots and the infrared reader, there is no need for more.

The computer is rounded out with full multimedia support. Speakers and located above the keyboard for either monaural or stereo sound In addition, there are ports on the side for microphone, line-in and line-out. The system is Sound Blaster-compatible.

The HiNote comes standard with Windows 95, but for an extra \$200 you can upgrade to Windows NT 4.0. There is a full instruction manual available on the hard drive as well as in print. I was not able m navigate through the electronic users guide with the included Adobe Acrobat reader. Digital offers a one-year warranty The HiNote series of notebook computers is definitely worth a look when you are ready to buy your next computer. Copyright @ 1997 Ed Kalm. All rights reserved

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586 DANESONE SYSTEMS

INTEL PENTIUM* or AMD PROCESSOR HEAT SINK AND FAN INTEL TRITON 430VX W/256K PIPELINE CACHE BUILT IN PCI EIDE CONTROLLER I 44MB FLOPPY DRIVE MID TOWER CASE

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AMD K6-200MHz MMX488
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AMD K5-133MHz215
PENTIUM*100MHz245
PENTIUM*133MHz275
PENTIUM® 166MHz 333/MMX403
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HPVECTRA 320 133MHz 1.2GB, 16MB, WIN 95 HPVECTRA 320 166MHz

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INTEGRATED EIDE PCI CONTROLLER
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	MGA MYHIGUE III JIMAMB (RETAL). HGA MHLENNIUM JO JIMAMB WAAM (R) ZHISHHS WAAN LUCAROE TRIDENT KET JOSEN HORZIMB TRIDENT JOSEN HORZIMB TRID	105/129 135/189 95/139 25/35 25/35 149 189 229	WD 12/14GB BDE WD 11/14GB BDE WD 11/14GB BDE WD 11/14GB BDE WD 11/14GB BDE MAXTOR 11/14GB BDE MAXTOR 40/15GB BDE REHOVABLE MARD BINNE ADAPTEC 7940UW PCI SCS	IT IDESC CONTROL I CONTRO I MO	1159/175 228/288 179/235 269/355 295 1185/215 1676 LER 169 OLLER 199	M-TECH RS33 4 M-TECH Muscan H-TECH Muscan H-TECH Muscan H-TECH Muscan H-TECH Muscan H-TECH PHAN INTEL PORTLAI ASUS YX97-512 ASUS TX97-512 ASUS	37TX SHIPSET rbott-RS34 437 rbott-RS34 437 NT PRO INTEL 4 (1970) NT PRO INTEL 4 (1971) N	\$1XX PREINS
	MGA MYURUNE IZ JIRAWAN (RETAL) HGA MILLENNIUM JOD JANIHAN WAAM (R) ZIRSAMB WAAN UPCRADE TRUBENT PCI 1969 IMBZ/JIN TRUBENT	105/129 135/189 95/139 25/35 39 149 189 229	WD 12/14GB BDE WD 11/14GB BDE WD 11/14GB BDE WD 11/14GB BDE WD 11/14GB BDE MAXTOR 11/14GB BDE MAXTOR 40/15GB BDE REHOVABLE MARD BINNE ADAPTEC 7940UW PCI SCS	IT IDESC CONTROL I CONTRO I MO	1159/175 228/288 179/235 269/355 295 1185/215 1676 LER 169 OLLER 199	M-TECH RS33 4 M-TECH Thunde M-TECH Mustan M-TECH Mustan M-TECH Mustan M-TECH PAIN M-TECH P	37TX SHIPSET rbott-RS34 437 rbott-RS34 437 NT PRO INTEL 4 (1970) NT PRO INTEL 4 (1971) N	\$1XX PREINS
	MGA MYURUNE IZ JIRAWAN (RETAL) HGA MILLENNIUM JOD JANIHAN WAAM (R) ZIRSAMB WAAN UPCRADE TRUBENT PCI 1969 IMBZ/JIN TRUBENT	105/129 135/189 95/139 25/35 39 149 189 229	WD 12/14GB BDE WD 11/14GB BDE WD 11/14GB BDE WD 11/14GB BDE WD 11/14GB BDE MAXTOR 11/14GB BDE MAXTOR 40/15GB BDE REHOVABLE MARD BINNE ADAPTEC 7940UW PCI SCS	IT IDESC CONTROL I CONTRO I MO	1159/175 228/288 179/235 269/355 295 1185/215 1676 LER 169 OLLER 199	M-TECH 8333 4 M-TECH Thunde M-TECH Muscan M-	37TX SHIPSET rhotit-R\$34 437 rhotit-R\$34 437 NT PRO INTEL 4 NO PENT II 440 NT SHIPSET	STAX PREUNE 19 VAC CHIPSET STAX 19 VAC CHIPSET STAX 19 VAC CHIPSET STAX 19 VAC CHIPSET STAX 15 VAC CHIPSET STAX 10 VAC CHIPS
	MGA MYLLONG EI PAMMY (RETAIL) MGA MALLANIUM 3D 2MSM/MS WRAM (R) MGA MALLANIUM 3D 2MSM/MS WRAM (R) MGA MYLLONG MGA MGA MGA MGA MGA MGA MGA MGA MGA MG	1105/129 135/189 95/139 25/35 149 189 229	WD 127 468 BDE WD 17 468 BDE WD 18 BDE WD 18 BDE WD 18 BDE REHOVABLE MARD DRIVE ADAPTEC 7940UW PCI SCS	IT IDESC CONTROL I CONTRO I MO	1159/175 228/288 179/235 269/355 295 1185/215 1676 LER 169 OLLER 199	M-TECH 8333 4 M-TECH Thunde M-TECH Muscan M-	37TX SHIPSET rhotit-R\$34 437 rhotit-R\$34 437 NT PRO INTEL 4 NO PENT II 440 NT SHIPSET	STAX PREUNE 19 VAC CHIPSET STAX 19 VAC CHIPSET STAX 19 VAC CHIPSET STAX 19 VAC CHIPSET STAX 15 VAC CHIPSET STAX 10 VAC CHIPS
	MGA MYLLONG EI PAMMY (RETAIL) MGA MALLANIUM 3D 2MSM/MS WRAM (R) MGA MALLANIUM 3D 2MSM/MS WRAM (R) MGA MYLLONG MGA MGA MGA MGA MGA MGA MGA MGA MGA MG	1105/129 135/189 95/139 25/35 149 189 229	WD 127 468 BDE WD 17 468 BDE WD 18 BDE WD 18 BDE WD 18 BDE REHOVABLE MARD DRIVE ADAPTEC 7940UW PCI SCS	IT IDESC CONTROL I CONTRO I MO	1159/175 228/288 179/235 269/355 295 1185/215 1676 LER 169 OLLER 199	M-TECH 8333 4 M-TECH Thunde M-TECH Muscan M-	37TX SHIPSET rhotit-R\$34 437 rhotit-R\$34 437 NT PRO INTEL 4 NO PENT II 440 NT SHIPSET	STAX PREUNE 19 VAC CHIPSET STAX 19 VAC CHIPSET STAX 19 VAC CHIPSET STAX 19 VAC CHIPSET STAX 15 VAC CHIPSET STAX 10 VAC CHIPS
	MGA MYLLONG EI PAMMY (RETAIL) MGA MALLANIUM 3D 2MSM/MS WRAM (R) MGA MALLANIUM 3D 2MSM/MS WRAM (R) MGA MYLLONG MGA MGA MGA MGA MGA MGA MGA MGA MGA MG	1105/129 135/189 95/139 25/35 149 189 229	WD 127 468 BDE WD 17 468 BDE WD 18 BDE WD 18 BDE WD 18 BDE REHOVABLE MARD DRIVE ADAPTEC 7940UW PCI SCS	IT IDESC CONTROL I CONTRO I MO	1159/175 228/288 179/235 269/355 295 1185/215 1676 LER 169 OLLER 199	M-TECH R533 A M-TECH MUSEUM M-TECH MUSEUM M-TECH MUSEUM M-TECH PHANT M	3/TX SHIPSET PROTEINS AND PROTE	\$1XX PREUNE "97 VX CHIPSET \$12X 19 VX CHIPSET \$12X 15 VX CHIPSET \$12X 15 VX CHIPSET \$12X 15 VX CHIPSET \$12X 16 VX CHIPSET \$12
	MGA MYLLONG EI PAMMY (RETAIL) MGA MALLANIUM 3D 2MSM/MS WRAM (R) MGA MALLANIUM 3D 2MSM/MS WRAM (R) MGA MYLLONG MGA MGA MGA MGA MGA MGA MGA MGA MGA MG	1105/129 135/189 95/139 25/35 149 189 229	WD 127 468 BDE WD 17 468 BDE WD 18 BDE WD 18 BDE WD 18 BDE REHOVABLE MARD DRIVE ADAPTEC 7940UW PCI SCS	IT IDESC CONTROL I CONTRO I MO	1159/175 228/288 179/235 269/355 295 1185/215 1676 LER 169 OLLER 199	M-TECH R533 A M-TECH R04 M-TECH MUSEUM M-TECH MUSEUM M-TECH MUSEUM M-TECH R64	37TX SHIPSET TOTOLOGY AND TOTO	SIZK PREUNE "Y CANTENDA "19 (19 19 19 19 19 19 19 19 19 19 19 19 19 1
	MGA MYLIQUE III ZIMEMBY (RETAIL) MGA MILENNIUM 3D 2 MIGHAN WAAM (R) ZHISHIN WAAM UNCAAD TA ZHISHIN WAAM Z	105/129 -115/189 -15/189 -25/15 -25/15 -149 -189 -229 -45 -159 -149 -149 -149 -149 -149 -169 -175/179	WD 121 468 BDE WD 114 608 BDE WD 114 608 BDE WD 114 608 BDE MACTOR 405 808 BDE MACTOR 405	IT IDESC CONTROI I CONTROI I CONTROI I CONTROI I LIBERTEDO JAINEDO JAINEDO JAINEDO JAINEDO	1159/175 218/128 218/128 218/128 219/1235 26/1235 219/1235 31 16/126 LER 169 DLER 199 RY \$6.50 24 3/125 3/125 3/125 3/125 3/125 3/125 3/125 3/125 3/125 3/125 3/125 3/125 3/125 3/125 3/125	M-TECH R533 A M-TECH MUSEUM M-TECH MUSEUM M-TECH MUSEUM M-TECH RF	37TX SHIPSET rhole R334 4377 rhole R334 4378 refore R334 4378 refore R334 4378 refore R334 4378 refore R334 refore	STAX PIPELINE V2
	MGA MYLIQUE III ZIMEMBY (RETAIL) MGA MILENNIUM 3D 2 MIGHAN WAAM (R) ZHISHIN WAAM UNCAAD TA ZHISHIN WAAM Z	105/129 -115/189 -15/189 -25/15 -25/15 -149 -189 -229 -45 -159 -149 -149 -149 -149 -149 -169 -175/179	VD 12/14 608 BDE VD 11/14 608 BDE VD 11/14 608 BDE VD 11/14 608 BDE MANTOR 21/17 68 BDE MANTOR 403 608 BDE MANTOR 403 608 BDE MANTOR 403 608 BDE MANTOR 403 608 BDE SEAGAIT 21/12 508 BDE REMOVABLE HARD DRIVE 1 ADAPTEC 29/40/19/15/25/11 HEB 12/17 708 SIII PN 418 403 500/15 ID PN 418	RIT IDE/SC CONTRO I CONTRO I CONTRO I LAFEDO Jar/EDO gubr/EDO gubr/EDO	1159/175 228/2288 2197/215 249/235 249/235 249/235 3105/215 3105/2	M-TECH R533 A M-TECH MUSEUM M-TECH MUSEUM M-TECH MUSEUM M-TECH RF	37TX SHIPSET rhole R334 4377 rhole R334 4378 refore R334 4378 refore R334 4378 refore R334 4378 refore R334 refore	STAX PIPELINE V2
	MGA MYJIQUE III JIBAMB (RETAIL) HGA MILLENNIUM JO JUBAMB WAAM (R) ZIBAMB WAAM LUCARDE THISENT CO JOBBO HARDMAN ATTI JO KARLSTON AMB PCZTY ATTI JO KARLSTON A	105/129 -135/189 -135/189 -25/139 -25/135 -199 -189 -229 -145 -189 -189 -189 -189 -189	VD 12/14 608 BDE VD 11/14 608 BDE VD 11/14 608 BDE VD 11/14 608 BDE MANTOR 21/17 68 BDE MANTOR 403 608 BDE MANTOR 403 608 BDE MANTOR 403 608 BDE MANTOR 403 608 BDE SEAGAIT 21/12 508 BDE REMOVABLE HARD DRIVE 1 ADAPTEC 29/40/19/15/25/11 HEB 12/17 708 SIII PN 418 403 500/15 ID PN 418	RIT IDE/SC CONTRO I CONTRO I CONTRO I LAFEDO Jar/EDO gubr/EDO gubr/EDO	1159/175 228/2288 2197/215 249/235 249/235 249/235 3105/215 3105/2	M-TECH R533 4 M-TECH MUSCH M-TECH MUSCH M-TECH MUSCH M-TECH MUSCH M-TECH SECH M-TECH	37TX, SHIESET TOOTHOUGH TO THE SHIESET TOOTHOU TO THE SHIESET TOOTHOU TO THE SHIESET TOOTHOU THE SHIESET TO THE	SIZE PREUNE "Y CHEST SIZE IN 19 10 CHISET SIZE IN 19 11 CHISET SIZE IN 19 12 CHISET SIZE IN 19 13 CHISET SIZE IN 19 13 CHISET SIZE IN 19 14 CHISET SIZE IN 19 15 CHISET IN 19 16 CHISET IN 19 16 CHISET IN 19 16 CHISET IN 19 17 CHISET IN 19
	MGA MYJIQUE III JIBAMB (RETAIL) HGA MILLENNIUM JO JUBAMB WAAM (R) ZIBAMB WAAM LUCARDE THISENT CO JOBBO HARDMAN ATTI JO KARLSTON AMB PCZTY ATTI JO KARLSTON A	105/129 -135/189 -135/189 -25/139 -25/135 -199 -189 -229 -145 -189 -189 -189 -189 -189	VD 12/14 608 BDE VD 11/14 608 BDE VD 11/14 608 BDE VD 11/14 608 BDE MANTOR 21/17 68 BDE MANTOR 403 608 BDE MANTOR 403 608 BDE MANTOR 403 608 BDE MANTOR 403 608 BDE SEAGAIT 21/12 508 BDE REMOVABLE HARD DRIVE 1 ADAPTEC 29/40/19/15/25/11 HEB 12/17 708 SIII PN 418 403 500/15 ID PN 418	RIT IDE/SC CONTRO I CONTRO I CONTRO I LAFEDO Jar/EDO gubr/EDO gubr/EDO	1159/175 228/2288 2197/215 249/235 249/235 249/235 3105/215 3105/2	HTECH RSJ3 4 HTECH HIDSEN HTECH HIDSEN HTECH HIDSEN HTECH HIDSEN HTECH RSJ2 BH HTECH HIDSEN HTECH RSJ2 BH HTECH HIDSEN HTEL PHAN HTEL WENUS AND HTEL WENUS AND HTEL WENUS AND HTEL WENUS AND HTEL WENUS HTEL WENU	37TX, SHIESET TOOTHOUGH TO THE SHIESET TOOTHOU TO THE SHIESET TOOTHOU TO THE SHIESET TOOTHOU THE SHIESET TO THE	SIZE PREUNE "Y CHEST SIZE IN 19 10 CHISET SIZE IN 19 11 CHISET SIZE IN 19 12 CHISET SIZE IN 19 13 CHISET SIZE IN 19 13 CHISET SIZE IN 19 14 CHISET SIZE IN 19 15 CHISET IN 19 16 CHISET IN 19 16 CHISET IN 19 16 CHISET IN 19 17 CHISET IN 19
	MGA MYJIQUE III JIBAMB (RETAIL) HGA MILLENNIUM JO JUBAMB WAAM (R) ZIBAMB WAAM LUCARDE THISENT CO JOBBO HARDMAN ATTI JO KARLSTON AMB PCZTY ATTI JO KARLSTON A	105/129 -135/189 -135/189 -25/139 -25/135 -199 -189 -229 -145 -189 -189 -189 -189 -189	VD 12/14 608 BDE VD 11/14 608 BDE VD 11/14 608 BDE VD 11/14 608 BDE MACTOR 21/14 608 BDE MACTOR 409 508 BDE MACTOR 409 BDE MACTOR	IT IDE/SC CONTROL I CONTRO I C	1159/175 218/2188 218/2189 219/2155 219/2155 219/2155 219/2155 218/2156 218	HTECH HSJJ 4 HTECH HIDSEN HTECH HIDSEN HTECH HIDSEN HTECH HIDSEN HTECH HIDSEN HTECH HIDSEN HTECH HEAD HTECH HEAD HTECH HEAD HTECH HEAD HTECH HEAD ASUS YWYS-SIJ ASUS PSSTIZH-1 ASUS PSSTIZH-1 ASUS PSSTIZH-1 ASUS PSSTIZH-1 HIDSEN	37TX SHIESET TOORNING TO THE TOORNING THE TOO	SIZK PREUNE 19 19 19 19 19 19 19 1
	MGA MYLIQUE III ZIMEMBY (RETAIL) MGA MILENNIUM 3D 2 MIGHAN WAAM (R) ZHISHIN WAAM UNCAAD TA ZHISHIN WAAM Z	105/129 -135/189 -135/189 -25/139 -25/135 -199 -189 -229 -145 -189 -189 -189 -189 -189	VD 12/14 608 BDE VD 11/14 608 BDE VD 11/14 608 BDE VD 11/14 608 BDE MACTOR 21/14 608 BDE MACTOR 409 508 BDE MACTOR 409 BDE MACTOR	IT IDE/SC CONTROL I CONTRO I C	1159/175 218/2188 218/2189 219/2155 219/2155 219/2155 219/2155 218/2156 218	HTECH HSJJ 4 HTECH HIDSEN HTECH HIDSEN HTECH HIDSEN HTECH HIDSEN HTECH HIDSEN HTECH HIDSEN HTECH HEAD HTECH HEAD HTECH HEAD HTECH HEAD HTECH HEAD ASUS YWYS-SIJ ASUS PSSTIZH-1 ASUS PSSTIZH-1 ASUS PSSTIZH-1 ASUS PSSTIZH-1 HIDSEN	37TX SHIESET TOORNING TO THE TOORNING THE TOO	SIZK PREUNE 19 19 19 19 19 19 19 1
	MGA MYLIGUE III PIMEMBY (REFAIL) MGA MALLANNUM 10 2 PRIGHAPS WRAM (R) MGA	105/129 -135/189 -135/189 -25/139 -25/135 -199 -189 -229 -145 -189 -189 -189 -189 -189	WD 121 469 BDE WD 114 608 BDE WD 114 608 BDE MATTOR 107 168 BDE SEAGAITE 117 508 BDE SEAGAITE 117 508 BDE MATTOR 107 167 167 167 167 167 167 167 167 167 16	IT IDE/SC CONTROL I CONTRO I CONTRO I CONTRO MA/FEDO Jahr/EDO Jahr	1159/175 128/128 128/128 128/128 129/125 129/1	HTECH RSJ3 4 HTECH HIDSEN HTECH HIDSEN HTECH HIDSEN HTECH HIDSEN HTECH RSJ2 BH HTECH HIDSEN HTECH RSJ2 BH HTECH HIDSEN HTEL PHAN HTEL WENUS AND HTEL WENUS AND HTEL WENUS AND HTEL WENUS AND HTEL WENUS HTEL WENU	37TX SHIESET TOORNING TO THE TOORNING THE TOO	SIZK PREUNE 19 19 19 19 19 19 19 1
	MGA MYLIGUE III PIMEMBY (REFAIL) MGA MALLANNUM 10 2 PRIGHAPS WRAM (R) MGA	105/129 -135/189 -135/189 -25/139 -25/135 -199 -189 -229 -145 -189 -189 -189 -189 -189	WD 121 469 BDE WD 114 608 BDE WD 114 608 BDE MATTOR 107 168 BDE SEAGAITE 117 508 BDE SEAGAITE 117 508 BDE MATTOR 107 167 167 167 167 167 167 167 167 167 16	IT IDE/SC CONTROL I CONTRO I CONTRO I CONTRO MA/FEDO Jahr/EDO Jahr	1159/175 128/128 128/128 128/128 129/125 129/1	HTECH HSJJ 4 HTECH HIDSEN HTECH HIDSEN HTECH HIDSEN HTECH HIDSEN HTECH HIDSEN HTECH HIDSEN HTECH HEAD HTECH HEAD HTECH HEAD HTECH HEAD HTECH HEAD ASUS YWYS-SIJ ASUS PSSTIZH-1 ASUS PSSTIZH-1 ASUS PSSTIZH-1 ASUS PSSTIZH-1 HIDSEN	JTTX. SHIPSET PROBLESSES 43 ST TOPPO NTEL TOPPO NTE	STAX PREUNE 19
	MGA MYLIQUE III JIMAMPI (REFAIL) MGA MILLENNIUM JO 2 MISAMPI WAAM (R) ARSAMPI WAAM LUCKAGO ARSAMPI WAAM AR JO XRESSION AMB PCZTV AN JO PRO JIMAGO SMB AN ALLIN-WOODEM 33 SKAPS INTTOICE HARMONY JJ SKAPS INTTOICE SPORTSTER SAKEPS INTERNAL W VOICE SPORTSTER SAKEPS ENTERNAL BOOKETER J SAKEPS WOOCE SPEAKERS PH- CALER IO INTERNAL STANDARD STANDARD CK 15° SWGA 2869 NJ DIGITAL SHAMROCK 15° SWGA 2869 NJ DIGITAL SHAMROCK 17° SWGA 2869 NJ DIGITAL SHAMROCK 18° SWGA 2869 NJ DIGITAL SHAMROCK 19° SWGA 2869 NJ DIGITAL	1105/129 115/189 195/139 25/13 25/13 149 189 229 189 229 189 229 189 189 229 189 189 189 189 189 189 189 189 189 18	WD 121 469 BDE WD 114 608 BDE WD 114 608 BDE MATTOR 107 168 BDE SEAGAITE 117 508 BDE SEAGAITE 117 508 BDE MATTOR 107 167 167 167 167 167 167 167 167 167 16	IT IDE/SC CONTROL I CONTRO I CONTRO I CONTRO MA/FEDO Jahr/EDO Jahr	1159/175 128/128 128/128 128/128 129/125 129/1	HTECH HSJJ 4 HTECH HIDSEN HTECH HIDSEN HTECH HIDSEN HTECH HIDSEN HTECH HIDSEN HTECH HIDSEN HTECH HEAD HTECH HEAD HTECH HEAD HTECH HEAD HTECH HEAD ASUS YWYS-SIJ ASUS PSSTIZE-H ASUS YWYS-SIJ ASUS PSSTIZE-H HIDSEN H	JTTX. SHIPSET PROBLESSES 43 ST TOPPO NTEL TOPPO NTE	STAX PREUNE 19
	MGA MYLIQUE III JIMAMPI (REFAIL) MGA MILLENNIUM JO 2 MISAMPI WAAM (R) ARSAMPI WAAM LUCKAGO ARSAMPI WAAM AR JO XRESSION AMB PCZTV AN JO PRO JIMAGO SMB AN ALLIN-WOODEM 33 SKAPS INTTOICE HARMONY JJ SKAPS INTTOICE SPORTSTER SAKEPS INTERNAL W VOICE SPORTSTER SAKEPS ENTERNAL BOOKETER J SAKEPS WOOCE SPEAKERS PH- CALER IO INTERNAL STANDARD STANDARD CK 15° SWGA 2869 NJ DIGITAL SHAMROCK 15° SWGA 2869 NJ DIGITAL SHAMROCK 17° SWGA 2869 NJ DIGITAL SHAMROCK 18° SWGA 2869 NJ DIGITAL SHAMROCK 19° SWGA 2869 NJ DIGITAL	1105/129 115/189 195/139 25/13 25/13 149 189 229 189 229 189 229 189 189 229 189 189 189 189 189 189 189 189 189 18	VD 12/14 608 BDE VD 11/14 608 BDE VD 11/14 608 BDE VD 11/14 608 BDE MAXTOR 11/14 608 BDE MAXT	INTERPORTEDO CONTRO DE LA PEDO CONTRO DE	1159/175 2284/288 249/255 249/255 249/255 249/255 249/255 25/25/25/25/25/25/25/25/25/25/25/25/25/2	MTECH ASJI 4 HTECH HINDER HTECH	JTIX SHIPSET PROBLEMS 34 4371 AND THE MEMORY SHIPSET C 400YX SHIPSET C 400YX SHIPSET C 400YX SHIPSET C 400YX CHIPSET AND THE MEMORY SHIPSET C 400YX SHIPSET AND THE MEMORY SHIPSET AND THE MEMOR	STAX PREUNE 19 19 19 19 19 19 19 1
	MGA MYLIQUE III JIMAMPI (REFAIL) MGA MILLENNIUM JO 2 MISAMPI WAAM (R) ARSAMPI WAAM LUCKAGO ARSAMPI WAAM AR JO XRESSION AMB PCZTV AN JO PRO JIMAGO SMB AN ALLIN-WOODEM 33 SKAPS INTTOICE HARMONY JJ SKAPS INTTOICE SPORTSTER SAKEPS INTERNAL W VOICE SPORTSTER SAKEPS ENTERNAL BOOKETER J SAKEPS WOOCE SPEAKERS PH- CALER IO INTERNAL STANDARD STANDARD CK 15° SWGA 2869 NJ DIGITAL SHAMROCK 15° SWGA 2869 NJ DIGITAL SHAMROCK 17° SWGA 2869 NJ DIGITAL SHAMROCK 18° SWGA 2869 NJ DIGITAL SHAMROCK 19° SWGA 2869 NJ DIGITAL	1105/129 115/189 195/139 25/13 25/13 149 189 229 189 229 189 229 189 189 229 189 189 189 189 189 189 189 189 189 18	VD 12/14 608 BDE VD 11/14 608 BDE VD 11/14 608 BDE VD 11/14 608 BDE MAXTOR 11/14 608 BDE MAXT	INTERPORTEDO CONTRO DE LA PEDO CONTRO DE	1159/175 2284/288 249/255 249/255 249/255 249/255 249/255 25/25/25/25/25/25/25/25/25/25/25/25/25/2	M.TECH ASJI 4 M.TECH THUSEN M.TECH MUSEU M.T	JTTX, SHIPSET PROBLEMS 34 34 35 357 17 17 18 18 35 37 17 17 18 18 35 37 17 17 18 18 18 37 17 18 18 18 18 18 18 18 18 18 18 18 18 18	STAX PREUNE 19
	MGA MYLIQUE III JIMAMPI (REFAIL) MGA MILLENNIUM JO 2 MISAMPI WAAM (R) ARSAMPI WAAM LUCKAGO ARSAMPI WAAM AR JO XRESSION AMB PCZTV AN JO PRO JIMAGO SMB AN ALLIN-WOODEM 33 SKAPS INTTOICE HARMONY JJ SKAPS INTTOICE SPORTSTER SAKEPS INTERNAL W VOICE SPORTSTER SAKEPS ENTERNAL BOOKETER J SAKEPS WOOCE SPEAKERS PH- CALER IO INTERNAL STANDARD STANDARD CK 15° SWGA 2869 NJ DIGITAL SHAMROCK 15° SWGA 2869 NJ DIGITAL SHAMROCK 17° SWGA 2869 NJ DIGITAL SHAMROCK 18° SWGA 2869 NJ DIGITAL SHAMROCK 19° SWGA 2869 NJ DIGITAL	1105/129 115/189 195/139 25/13 25/13 149 189 229 189 229 189 229 189 189 229 189 189 189 189 189 189 189 189 189 18	VD 12/14 608 BDE VD 11/14 608 BDE VD 11/14 608 BDE VD 11/14 608 BDE MAXTOR 11/14 608 BDE MAXT	INTERPORTEDO CONTRO DE LA PEDO CONTRO DE	1159/175 2284/288 249/255 249/255 249/255 249/255 249/255 25/25/25/25/25/25/25/25/25/25/25/25/25/2	MTECH HASIA HATCH HASIA HASIA HATCH HASIA	JTIX SHIPSET PROBLEMS 33 43 31 31 31 31 31 31 31 31 31 31 31 31 31	SIZK PREUNE "92 VX CHIPSET SIZK 19 19 VX CHIPSET SIZK 19 155 TH INTEL HORX 19 15 TH INTE
	MGA MYLIQUE III JIMAMPI (REFAIL) MGA MILLENNIUM JO 2 MISAMPI WAAM (R) ARSAMPI WAAM LUCKAGO ARSAMPI WAAM AR JO XRESSION AMB PCZTV AN JO PRO JIMAGO SMB AN ALLIN-WOODEM 33 SKAPS INTTOICE HARMONY JJ SKAPS INTTOICE SPORTSTER SAKEPS INTERNAL W VOICE SPORTSTER SAKEPS ENTERNAL BOOKETER J SAKEPS WOOCE SPEAKERS PH- CALER IO INTERNAL STANDARD STANDARD CK 15° SWGA 2869 NJ DIGITAL SHAMROCK 15° SWGA 2869 NJ DIGITAL SHAMROCK 17° SWGA 2869 NJ DIGITAL SHAMROCK 18° SWGA 2869 NJ DIGITAL SHAMROCK 19° SWGA 2869 NJ DIGITAL	1105/129 115/189 195/139 25/13 25/13 149 189 229 189 229 189 229 189 189 229 189 189 189 189 189 189 189 189 189 18	VD 12/14 608 BDE VD 11/14 608 BDE VD 11/14 608 BDE VD 11/14 608 BDE MAXTOR 11/14 608 BDE MAXT	INTERPORTEDO CONTRO DE LA PIEDO DE LA PIEDO CONTRO DE LA PIEDO DE LA PIEDO DE LA PIEDO DE LA PIEDO DE LA PIE	1159/175 2284/288 249/255 249/255 249/255 249/255 249/255 25/25/25/25/25/25/25/25/25/25/25/25/25/2	MTECH HASIA HATCH HASIA HASIA HATCH HASIA	JTIX SHIPSET PROBLEMS 33 43 31 31 31 31 31 31 31 31 31 31 31 31 31	SIZK PREUNE "92 VX CHIPSET SIZK 19 19 VX CHIPSET SIZK 19 155 TH INTEL HORX 19 15 TH INTE
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NETWORKING . BY PETER JOHN HARRISON

Online At 56Kbps

The New Modem Technology

Whether you

a Net surfer looking for a faster way is get online, or a LAN manager looking to provide users with dial-up access, the new "56K" modem technologies have probably caught your eye. Promising a higher speed over standard analog phone lines, they sound like an attractive alternative to ISDN. The question is, do they really perform as advertised? Can an analog modern compete with ISDN? It is a question worth asking, but to really understand the pros and cons of this new technology, you need to understand a little about how it works.

Traditional Modern Basics

Traditional moderns were invented long before the "digital revolution" hit the telephone industry. As a result, modems were designed to transmit data over a system that usell analog technology to transmit sound Early modems, called acoustic couplers, worked by placing a telephone handset into a cradle containing a speaker and nucrophone Once the handsets each end of the connection were in their cradies, the acoustic couplers meach end of the connection sent digital data by converting it to wery precisely modulated audio signal, then demodulated the signal at the other end, converting it back into binary data. The word modem comes from the first few letters of the terms MOdulate and DEModulate

since the days of the acoustic coupler Modems of the 1960s transmitted data at speeds of 110 bps, but today's moderns can send data m up to 33.6Kbps, more than 300 times as fast. Even so, their basic principle of operation remains the same. Moderns still convert digital information 52 MICROTIMES - JUNE 25, 1997

into a precisely modulated analog signal, and that introduces some very specific limitations on how fast a modem can send data

It's All Shannon's Fault

The problem is that at 33.6Kbps, traditional modem technology has all but reached the theoretical maximum transmission speed defined by Shannon's Law. Shannon's Law in an equation that proves that, given the way our modern telephone system works, the best data rate you can get out of a static and loss-free analog-to-analog modem connection is about 35Kbps.

Based on Shannon's Law alone, you would assume that today's new 33.6Kbps are about as good as modems that work with standard

tial of the analog signal at the time the sample taken After being sent to the central office serving the phone line being called, the sample information is used to generate similar electrical potentials at the other end of the connec tion. These short bursts of voltage, when taken together, create a close facsimile of the original analog signal

Sampling At 56K

If an analog modern could control the value of each sample it sent, It could achieve data rates of 64Kbps What Shannon's Law shows, however, is because analog modems have no way of knowing when each sample begins or ends. modems cannot achieve that level of control. An

Modems still convert digital information into a precisely modulated analog signal, and that introduces some very specific limitations on how fast a modem can send data.

phone lines are ever going to get, and you would be right-except that the modern telephone system is not really an smalog system anymore.

Today's telephone network is mostly digital, so instead of transmitting analog signals from one location the next, the telephone system converts the analog signals generated by our telephones and modems into tiny "sound bytes," called samples, each 1/8000th of a second long. Then each sample is assigned a numeric value representing the electrical poten-

ISDN digital device, on the other hand, can assign exact values to each sample, and ask the phone system to pass the specific corresponding sample voltage for that value us to an analog device connected to a standard telephone line

T. 213

That is how the new breeds of 56Kbps "modems" work-by using an ISDN digital device in the 'central site" to set exact values for each sample. Since each sample can have up to 256 values, or eight bits of data, the theoretical "top speed" for this technology would allow for

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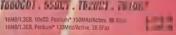
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Networking continued

line speeds of up to 64Kbps (8000 samples per second times eight bits per sample). In practice, however, other limitations of the photic system reduce the number of usable values by half, to 128 values, or seven bits of data per sample. Multiply those two numbers-8000 samples per second by seven bits per sample-and you get the maga-56,000 bits per second

This is a radically different way of using a telephone line to send data So radical, in fun, that the old moniker "modem" no longer really applies Instead of "modulating" the signal sent from the ISDN-capa ble central the central site actually encodes it. So 56K "moderns" no longer actually "modulate" and "demodulate" their signals, but "modulate" and "decode "

The Fine Print

The new 56K modern technology a fast when it works, but there are many limitations to this new technology. These limitations can force 56K moderns transfer data at speeds well below 56Kbps, or even force them to abandon 56K operation altogether and run in standard analog modem mode.

The first of these limitations is that the "central site" location you are dialing in to has to have me ISDN line and equipment designed to work with the type of 56K modem technology you are using. With two different 56K modem philosophies out there, many Internet Service Providem and telecommuting managers are waiting for one definitive standard to amerge before investing money on new equipment. That means you are far from guaranteed that the ISP you dial into will support 56Kbps connections with your modern. (Do not worry that you will not be able to make a connection, though. If a location you are dialing in to does not support 56K connections, your modern will just "fall back" and work like a standard 33.6 or 28.8Kbps analog modern.)

Another limitation is that 56K moderns can only send data at 33 6Kbps or less. Like any other analog device, 56K modems still not establish the timing of the phone company's outbound samples So, like any other analog modem, they are subject to the limitations of

The condition of your local telephone line is also a limiting factor 56K modern technology requires a high level of precision in the voltage and timing of each sample. That means that the physical phone line used to connect a 56K modern with the central office cannot have special amplifiers to extend the reach of the phone line. These devices distort the integrity of the samples and force 56K moderns to fall back and operate like a standard 33 6Kbps analog modem. So If your phone line is in a rural location, in even just on the outskirts of town, you may be out of luck where 56K modern connections are concerned

Your phone service needs to be from a phone company's central office that is capable of managing the very precise signaling requirements of 56K. While this is not a concern for most phone company customers, not all central office locations can handle it

Hotel and office PBX systems can also be a problem. PBX systems. which allow several telephone users at a single location to share a more limited number of telephone lines, often receive, sample, and re-transmit the central office signal to their local users. This destroys the integrity of the individual samples, and, once again, forces 56K modems to fall back to standard analog modern operation. (On the

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positive side, though, PBX systems that use ISDN lines instead of analog to connect them to the telephone company do not suffer from this limitation.)

Even on phone lines with none of these problems, there are still line conditions that can slow down a 56K modem. The most bedeviling of these a static electricity. Static comes from radio signals and other sources of electromagnetic interference that pass through your tele-

phone line Static causes subtle changes — the signal on the line, altering the precisely calibrated voltages of each sample. These distortions force 56K moderns to use an even more limited number of the 256 voltage levels available to each sample. The result is that the modern falls back to # lower transmission rate that, while still faster than standard modern data rates, are appreciably less than 56Kbps. The 56K modern users I have spoken to tend —

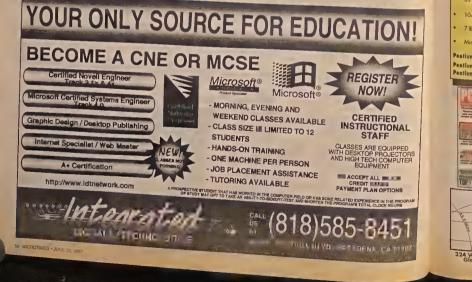
get connections that operate in the 42.6 to 48Kbps range, 15–25% slower than the advertised 56Kbps

Lastly, even when everything else is working fine, FCC regulations restrict 56K modem technology to a top speed of 52Kbps. The FCC imposed these restrictions because of concerns that using the full 56K speed might overload the telephone system. If and when the ftCC becomes convinced that this is no longer a concern, they will allow 56K modems to fly at full speed. Until then, though, FCC regulations will throttle 56K modem technology back to protect the integrity of the rest of the voice calls on the telephone network.

Shannon's law is an equation that proves that, given the way our modern telephone system works, the best data rate you can get out of a static and loss-free analog-to-analog modem connection is about 35Kbps.

But Does Buying Ibli Make Sense?

The upshot of all this is that 56K modem technology can provide substantial improvements in speed over conventional modem technology



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Networking continued from page 56

for some users, but not every user in every location. My take on this technology is that if you live in a metropolitan area and isi you want is faster Internet access, 56K modern technology may be a good investment. Just be sure in check with your ISP and see if and which 56K modern technology they support before buying.

If, on the other hand, you are looking to 56K technology as a solution for remote LAN access, I think that 56K's spotty performance makes it a risky technology to invest in, particularly when there is another, standards-driven and proven

technology that provides even better performance than 56K-ISDN. With ISDN adapter prices costing as little as \$200, it just makes sense to invest in ISDN, particularly when you have to install ISDN at your central site in use 56K technology anyway. So my advice is to either skip 56K modern technology entirely, to buy into a central solution that supports standard analog modem, 56K and ISDN connections. That way you was provide true highspeed ISDN access to your power users who

have a separate phone line for their computer and home office, while still providing the fastest modem technology available to people with just one phone line for their household Copyright @ 1997 Peter J. Harrison All rights

Rockwell International's K56Flex Technology page

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If your phone line is in a rural location, or even just on the outskirts of town, you may be out of luck where 56K modem connections are concerned.



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TELECOMMUTING - BY ROBERT MOSKOWITZ

Issues Of Security And Safety For Telecommuters

"Home Visits" Take On A New Meaning In An Era Of Telecommuting

An interesting

trend among employers of telecommuters is "home visit." Until recently, employers were concerned about what a telecommuter's home office might look like, but had no established model of procedures or parameters regarding how or when to check them out.

Today, more and more employers are recognizing they have a tremendous investment in their telecommuters' home offices, not only from the standpoint of the equipment the employer might own in those remote locations, but also in terms of safety and security

For example, if you're telecommuting to work from your home office and you trip over an extension cord, burn yourself with hot coffee, or come down with severe Carpal Tunnel Syndrome, there's every likelihood of a legal responsibility on the part of your employer. To my knowledge, none of this has been tested in yet. But who could expect to prevail with an argument that an employer has no interest in the safety and security issues of employees

That's some of the background behind the changes now taking place in the world of telecommuning. It helps explain why neveral relatively large-scale employers and now directing their supervisors who have telecommuters on their teams to make plans to visit their telecommuters' off-site workplaces.

More and more employers are encouraging these site visits when their employees first begin to work from a remote site, usually as one small part of the approval process. An increasing number of employers are also asking for repeat visits to their telecommuters' homes at regular intervals, perhaps every year, every six months, or even every quarter-depending on the specifics of the situation and the nature of the work he or she is doing

Because of the well-recognized and entirely legitimate concerns about privacy, visiting a telecommuter's home and inspecting his or her workplace is usually a lot more sensitive issue than inspecting a workplace in a public telecommuting center. That's why employers generally seem to be bending over backwards to make sure they don't upset anyone or violate any employees' rights, while at the same time trying to make sure they are protecting their own interests by verifying the safety and security of their telecommuters' home-based workplaces

Home Visit Guidelines

Currently accepted guidelines for site visits to telecommuter's home offices usually include some or all of the following items:

- 1. Supervisors should schedule the site visitwith each telecommuter at a time of his or her convenience. For simplicity, the best time might be when other family members are away from the home. Don't force a visit when it's not wanted, but make clear that a visit must take place if telecommuting is to be allowed to continue
- 2. Have a written checklist of items to be inspected, and limit your inspection to the telecommuter's workplace, and specifically to these items. This checklist will usually include:

a. Verify there is adequate electrical power and power outlets, work space, and access pathways.

- b. Verify there is ergonomic lighting, seaung. work-surfaces, and other work-related
- c. Verify power cords, work-related tools, filing equipment, office equipment, and items stored in overhead shelves or bins safely arranged and secured.
- d Verify there are reasonable safeguards in place to prevent family members from getting hurt within the telecommuter's workspace.
- e. Verify there are reasonable safeguards in place against loss or theft of the employer's proprietary data and equipment.

f Verify there are reasonable safeguards in place to protect the confidentiality of matters related to the telecommuter's work

Today, more and more employers are recognizing they have a tremendous investment in their telecommuters' home offices, not only from the standpoint of the equipment the employer might own in those remote locations, but also in terms of safety and security issues there. 62 MICROTIMES - AIRE 25, 1997

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Telecommuting continued

3 Establish the degree of compliance with the employer's work rules for telecommuters regarding taking home, storing, and using information, equipment, and other resources from the employer For example: Does the telecommuter comply with the employer's rules regarding storage of company data on a privately owned computer?

4. Make a detailed inventory of employerowned equipment and other resources being used at the telecommuter's workplace. Verify the presence or absence of dedicated telephone lines, fax equipment, telephone routing equipment, and other products and services paid for by the employer for the telecommuter's use.

5. Both the supervisor and the telecommuter should sign and date a site-visit form indicating that both parties were satisfied with the conduct of the site visit. Also, both parties should sign the complete inventory list to indicate they accept it as accurate.

The most ticklish part of conducting a site visit as the telecommuters home as that it can compromise the atmosphere of "trust" that has previously been established between the telecommuter and his or her supervisor. To help prevent any compromise of this all-important trust, the supervisors should take pains to make clear that:

 a) All telecommuters are being visited, not just a few who have been singled out for suspicion or verification

b) No problems or danger signs have prompted the request for this site visit. The visit is a normal (although perhaps a brand-new) part of the employer's well-established and long-standing policy at telecommuting. It is merely one more aspect of the employer's overall efforts to help the telecommuter maintain a safe, secure workplace.

c) These visits are intended more to provide opportunities to improve the telecommuters'

home workplaces, rather than an attempt to find fault with them or shut them down

Two New and Interesting Phone Products

One of the biggest drawbacks to working as a telecommuter has always been the lack of 'professional' telephone systems. It's bad enought or miss a call from an important chent or customer. How much worse would it be if your a year-old daughter answers an important call, makes a few unintelligible noises in the caller's ear, and then leaves the phone off the hook without telling you?

So it's always exciting when new products come along to make the process of stoying in touch with others a lot easier and more professional for people working as telecommuters in temote offices or at home.

Here are two I think will particularly interest you.

continued on page of





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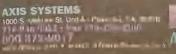
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Telecommuting continued from page 64

The SoloCall "Smart" System

This is actually a line of products from SoloPoint that handle your incoming calls just like they would be handled in your companys

The SmartScreen is the simplest of the devices. It's designed to make more sophisticated use of telephone lines on which you've installed the phone company's messaging service, == "yoice mail" You simply plug the SmartScreen into the line between your telephone and the wall jack. From then on, whenever a call comes in SmartScreen lets you listen to the caller without picking up the phone If you wish, you make immediately connect to the caller from any telephone on that line, even if he or she is in the middle of leaving a voice mail message Finally, SmartScreen continually monitors your line and flashes a warning when you have voice mail messages waiting 50 when you return from an absence you no longer have to pick up the phone and listen for the stuttering dial tone to find out if someone has left a message while you were out

The SmartMonitor goes a step further and provides a very sophisti cated form of call forwarding. Utilizing multiple telephone lines, the SmartMonitor effectively links your affice phone to your cellular phone With SmartMonitor in operation, whenever someone calls your office number, your cellular phone rings simultaneously. When you answer, you're connected to your own line as im "off-site extension." It's then your choice whether you'll listen in without being heard or "answer" the coll as if you were picking up a phone in your office. You can even listen privately as the other party leaves a message on your answering system

The SmartCenter in the most sophisticated mement in this product line. Functioning as an automated switchboard, the SmartCenter lets your caller choose whether to leave a message, send a fax, page you, connect to your cellular phone. This makes it easy to give people a single telephone number, and feel confident they was reach you an matter where you happen to go.

If you're part of a larger organization, the SmartCenter is extra use ful because it provides a menu capability you must preset to let callers route themselves to other telephone lines for special handling of their specific needs, such as talking to a bookkeeper an account manage er. SmartCenter can also treat incoming calls differently muthe basis of their Caller ID numbers, distinctive ringing, or the individual PIN numbers you can give to people who call you frequently. Calls from individuals or groups of people can then be selectively routed to answering machine, or to a different phone number where you-or 3 person covering for you-can answer.

In addition, you can program the SmartCenter to change how If handles incoming calls, depending on the time of day and day of the week. For example, you can set it up to forward important calls = youtcellular number during the days you're telecommuting, but forward them to your regular office during the days you're working there, and to an answering machine on weekends

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each response sent to the intended recipients at specific times of the business day in their different time zones.

7. Keep automatic logs of the phone calls you make and teceive, including manually or automatically recording any or all of what's said during these telephone conversations.

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UNIX . BY BENNETT FALK

Where Scalability Comes From

UNIX And Enterprise Computing

Toward the end of the

month of May, Microsoft hosted something called "Scalability Day," a hefty marketing event aimed accomming the people that run businesses that their businesses could be run on Windows NT, no matter how big the business in question might be

Now a couple of observations we worth making about "Scalability Day." First, it's an event aimed at expanding NTs market share at the expense of UNIX, Microsoft is very eager to portray Windows NT Server as a cost-effective alternative to UNIX.

The second observation is that "scalability" is a very slippery word and that it should be treated with seen. It is a word that exists in the weird twilight zone where marketing and engineering overlap.

Marketing and engineering each have their own kind of gravity that pulls scalability this way and that. Marketing would really like for scalability to be something very general, along the lines of "No matter how big your business is, you can run it on Windows NT". Ultimately, marketing wants to make scalability a verb, to say of one's own product (whatever it happens to be) "It scalest" and to say of the competition "It doesn't scale." In this view scalability is a quality that things either have or lack.

Engineering on the other hand, would like a number—the number of transactions a given system can process in a second, or the increase in system capacity that will be gained by adding another processor in this view scalability is something quantitative, a matter of degree

Perennial divisions such as those between marketing and engineering or between quality 72 MCCOTIMES - UNE 23, 1997. and quantity will not be solved here. The best we can do is to shed some light what our choices are and why we have to worry about things like scalability in the first place.

The Disappearance Co

On this latter question, I blame the disappearance of UNIX

For most of this decade, UNIX has been disappearing. Not "going away," you understand, but becoming invisible.

Not all that long ago, the principal beneficiaries of UNIX were the people who used it interactively. The usable part of UNIX is a collection of simple tools that the be combined in new and interesting

"Scalability" is a very slippery word that should be treated with care. It exists in the weird **twilight zone** where marketing and engineering overlap.

ways to meet the challenges of the moment.

The UNIX toolkit approach is life-enriching for some people and torture for others. When the Macintosh and the various editions of Windows introduced visually interesting, easy-to-use systems with standardized solutions for say, 75% of the things a computer user might need to do, personal computers "took over" the desktop. The computers that most people actually use are now personal computers.

But the computers that people interact with are not the only computers in the environment. UNIX, as it has been displaced on the desktop, has moved to the data contern.

The computers in a corporate data center are typically servers that don't expect to be used

Interactively by actual human beings. Instead they host one or more applications (such as a Web server or a database management system). Between the human user and the application hosted on a server computer, there are chent programs (Web browsers are a good example) that run = "desktop computers. The client software manages all the user's interactions with the server part of the application. The real user of the server machine = not the human at all, but software clients.

Enterprise Servers

The UNIX industry's commitment to this "Enterprise Server" class of machine is indicated by a series of announcements that have appeared over the last four walks from val-

appeared over the last few weeks from various UNIX vendors

Hewlett Packard Introduced the HP 9000 V-Class Enterprise Server. The V-Class servers are powered by 64-bit processor running at 200MHz and the V-class SMP

support up to 32 processors. The V-class also features a high-performance backplane that shutles data back and forth between the processors and memory at an alarming speed. The base pince for a V-class machine is \$170,000, and of course, the V-class computers run UNIX HP-UX 11 00).

Sun began shipping its "Starfire" (or Ultra Enterprise 10000) line of servers in May. The Enterprise 100000 uses the 250MHz UltraSPARC processor and can accommodate up to 6d them. Memory configurations range from 2GB to 64GB. The Starfire series runs Solaris, Sun's UNIX implementation.

And on May 18, IBM's Deep Blue defeated chess champion Garry Kasparov in a six-game chess match. Deep Blue is based at the RS/6000

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UNIX continued

SP, another multiprocessor computer. For the chess match, Deep Blue was configured with a total of 32 processors: two "wide nodes" running 135MHz processors supported by 1GB of memory and thirty "thin" nodes running 120MHz processors with 256MB of memory. Deep Blue runs IBM's UNIX implementation, AIX

These are very powerful computers, and they cost a lot of money. Companies don't buy them for fun; they buy them because they can justify

Justifying the expense usually comes down to two things: performance and scalability. Establishing a computer's performance as a matter of figuring out how much work the computer can do and what it will cost to do that work.

Scalability, on the other hand, is a matter of figuring out the productive lifetime of the computer-how long it will be before the company's workload overwhelms the computer's capacity and a new computer must be purchased. If the computer's capacity can be expanded (as is the

case with the all multi-processor computers mentioned above), how much additional capacity can be gained by adding processors?

Scalability And Enterprise Computing

In a sense, scalability depends apperformance, and both performance and scalability depend how the computer's work in measured

In the old days, the unit of work was the interactive user; UNIX performance was a matter of how many interactive users could work with a machine simultaneously.

The trouble with this measure of performance is that the "interactive user" is a very difficult unit of work to standardize; some are reading news and cruising the Web, some are sleeping, some are nroffing their dissertations, some are compiling C programs, and some are hunting for eight-letter palindromes in /usr/dict/words, It's hard to arrive = meaningful price/performance ratio when the unit of

performance is so difficult to manage Fortunately, UNIX disappeared from the desk top before all the UNIX vendors exhausted themselves in the attempt

The trend toward "user-less" servers called for a new way of measuring performance For server-class machines and the applications that run a them, the preferred unit of work is the "transaction." Transactions, like debiting or crediting an account, are an application-basel (as opposed to "user-based") unit of work

Unfortunately, transactions are almost as variable a unit of work as interactive users, and anyone who states a performance claim in transactions-per-second should be prepared to explain in the most breath just what they mean by "transaction.".

While transactions can be quite variable. however, they lend themselves more madily to standardization than interactive users do Consequently there are organizations like the Transaction Processing Council (TPC) that have





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UNIX continued from page 74

worked hard in standardizing transaction-based performance measurements. At its Web site the TPC maintains a spreadsheet of the certified results reported for the various transactional benchmarks it maintains.

But once we've measured performance in transactions per minute, what else must be done to arrive at scalability?

An announcement from Sun (also in May) illustrates the relationship between performance and scalability. Sun announced benchmark results for a suite of tests developed by Oracle. The Oracle tests measure a computer's ability to complete business processes simulating the work done in finance and manufacturing. The business processes are constructed out of liftyseven different kinds of transactions that occur m finance and manufacturing applications.

The tests were run on an Ultra Enterprise 6000 computer configured for eight CPUs. With a load of 1100 client programs, the Ultra Enterprise 6000 could complete 190 transac-

tions per minute. When configured with 24 CPUs the Ultra Enterprise 6000 could support 3000 users and achieved a throughput of 500 transactions per minute

The point of this exercise is that performance alone isn't an indicator of scalability. The first scenario (1100 clients running against an 8-CPU machine) established the capacity of the baseline configuration. The second scenario showed that tripling the number of processors very nearly tripled the amount of work the system could do.

To arrive at some idea of how scalable a computer (or an application or maperating system) might be, performance must be measured repeatedly under conditions that are well understood and allowed to vary only m controlled ways.

Ultimately, scalability is about limits. We seem to measure scalability to determine the capacity of computer or an application to do work, and this capacity will not be infinite. Inexorably the law of diminishing returns kicks in, and the 20th, or the 32nd, or the 64th processor that is added to a

computer will contribute less additional capacia than the second or third or fourth processor

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And for anyone who believes that scalability is about running any business, and matter how big on an operating system, it might be helpful to remember that there was a time when businesses of every size could be run on no computer at all Copyright @ 1997 by Bennett Falk All rights

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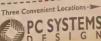
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Internet Research

How To Find It, Analyze It, And Write It Up Professionally

Research is power. As more and more information accumulates on

the Web, moving around the Net with agility means that you can find things other people can't. Those people will gladly pay you as do so, because so many are still intimidated by the Web.

This month we look at four tools to facilitate research on the Internet. Two are new, and two are old friends that have come out in new editions.

NetResearch

Some of us just dive right in and start looking for something. That's fine; It is certainly my style. But we who jump in find that those who of-date when they hit the street and grow more obsolete by the week.

Barrett's book is different—he offers a metawew. He writes about how to approach online research itself, rather than just about how a find specific information. His goal is not to produce good research. His purpose is to produce a good researcher. As such he tree to train your investigatorial intuition. I know Barrett's techniques work because I've happened on a few of them myself over the years, but I've never seen them all in print before.

Instead of telling you to try this or that site, he tells you how a shrewd researcher can guess where good sites might be hidden. He has a useful brief section on guessing the probable URL for a given company or academic institution. He

adventures with them summarized in book Instead of just one viewpoint, you get to hear from users of different temperament and experience. Barrett devotes a whole chapter to finding people through the Internet. One of his contributions tells of catching up with a colleague who was at a conference in Scotland hopscotching around the Web until she found a way to reach him.

There are two obvious markets for this bool-One is the beginning investigator who wants an overview of the Web as a research tool, and a definition of terms. Barrett does that well A second market is the seasoned Web walker The difference between an adequate online researcher and an inspired one is that the genius can always think of one more approach

to the problem. Barrett helps)^{OB} find that one additional way

In NetResearch, Daniel Barrett writes about how to approach online research itself, rather than just about how to find specific information. His goal is not to produce good research. His purpose is to produce a good researcher.

prepare themselves soon catch up and pass us, because they have surveyed the field first

One very fine overview for online researchers about by Daniel J. Barrett called NeiBesarch. Finding Information Online It is an O Reiliy book, and that is always a good sign. O'heiliy books have less fluff at them than most computer publications.

Most tomes in the research field would have long lists of Uniform Resource Locators (URLs) that you suspect the author has cut and pasted from someplace online. Since Web sites appear and vanish like spindrift, these books are outgives very effective ups that will save the beginner hours in ovestigating a topic; one is a find and read FAQ fles, the compendia of Frequently Asked Questions that are put on the Net by separts and knowledgeable amateurs. When Barrett does give lists, they ampartuplarly useful One a of Internet country domains. You probably knew that Switzerland is ch (for Confederation Helveita) but did you know that Antarcuca is aft.

Barreit has recruited some skillful collaborators. These are men and women who have used the features he is talking about, and whose

WebCompass

At this point you might be saying to yourself, "Why doesn't some body design a program that will do all this work for me?"

Well, someone did, and Quarterdeck has published it.

At the beginning of the year, as predicted that 1937 would be the year of intelligeriagents. WebCompass as a of them, it is a program that will go online and do a brute-force search for your topic. It will as everywhere had you can think of and come beak with all known instances of your search terms. There are think five search engines that WebCompass will invoke as pursuit of your topic, if you wish it does the kind of thorough perusal of online resources that you know you should do but do not have the patience for.

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When you first invoke WebCompass, you are offered a lutonal which is worth taking It shows you how to get around a WebCompass, and how to configure it for your own uses But WebCompass will reward even the beginning user, because its residen wazard will guide you through = elementary search

You begin searches by naming a topic. The name becomes the first search term that WebCompass will pursue through the Internet. You can add as many other query terms as you want. Then you set the agent loose. It sends the search terms off to various search engine Alta Vista, Lycos, HotBot, InfoSeek and many others are consulted

When WebCompass has gotten as many hits as it can from the van ous search engines, it first eliminates duplicates from the catalogue Then it sends for copies of the Web pages # still has on its list and makes summaries of them. I am not sure what artificial Intelligence program it uses to make those summaries, but it seems more sensible than that in (for example) Microsoft Word's summary-maker Finally this edited summation is presented to you.

You are invited to look at the list and delete those pages that are obviously not relevant to what you are doing. You can also summon the pages that seem possibly pertinent. WebCompass looks over your shoulder as you do both the deletions and the summonings. It is refor ing its internal idea of what you want, because it m not yet done It will go out and look for more pages on this same topic in the future. often as you wish it to do so (daily, weekly-you choose) It will not again retrieve the pages you have rejected by deletion. It will look for new Web pages on the topic, and for revisions of old pages that you that you seemed to like on its earlier searches.

It can also look for Usenet articles, ftp files, and gopher sites. With little presetting, you can get the program to search most of the avail able Internet for any topic of interest to you

My research deals with a wide variety of unrelated topics. I need to find people of whom I have never heard before. I need to find unusual organizations, or peculiar documents. I could laboriously construct 3 search strategy for each of these tasks, or I could unleash WebCompass. WebCompass has reduced my initial search time by 3 factor of ten. The program orders its results by its best guess of rele vance People I need to find not only appear on WebCompass's results list, but they appear at the top.

The price? \$50 Nope, that is not a misprint. Half a C-note will buy this, Amazing, How do they make money giving such products away?

If you have almost no patience with research, but you must do!! anyway. WebCompass is your tool.

NUD*IST

Several months ago, research maven Tim Lavath and I wrote an article (See RESOURCES for a pointer to the online edition of that review about software tools for a special sort of inquiry. Called "Qualitative research, it concentrates on meaning and nuance rather than number bers. It has many varieties, but most of them involve working with texts. The researcher reads the text and finds what seem to be themes The motifs are gathered together into groups or categories. A sort of hierarchy evolves as the researcher returns again and again to the test to find new shadings of meaning and to ask new questions "Qualitative" research is favored by those who distike a merely numer

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cal approach to reality, and also by those looking for ideas that may later become the basis of quantitative research.

One of our favorite software tools was version 3 of NUD'IST, the software with the unforgettable name Just as our article appeared, so did a new edition of the Non-numerical Unstructured Data Indexing, Searching and Theory-building program Version 4 has a number of improvements that make NUD'IST even more usable for business researchers.

"Great name. What does it do?" NUD*JST in a program for marking up text with ideas and tative and quantitative approaches. You can also import quantitative or database data and pre-create categories based on the imported information

NUD*IST takes more than an afternoon an learn, and Tim Lavalli warns that the steep learning curve and high cost can make it a bad choice for a single project. It also as not ideal for visual data, as it is rooted in a computer language called LISP that is tich in textual tools but poor in graphics.

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There's lots more to EndNote Its latest version bundles EndLink, a utility that lets you well cet citations online and import them directly into the database without having to retype them. The newest Windows version will work as an add-in to either Windows for Office 97 or WordPerfect.

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You can have NUD*IST automatically code large bodies of text. You must write short command files to take advantage of this feature, but they are not impossible and there are many examples provided. The command files was vasily simplify the annotation and coding of the thuge sheaves of text one can gather in a Web search.

The new version of the program provides additional tools for getting quantitative results as well as qualitative. You can create a report on the number of Web pages that mention Madonia and do not mention Argentina, and export it to other programs for further statistical analysis. This extension is particularly valuable for those of its who with it use both quali-

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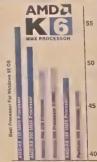
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Court Decision Supports Programmers; Complicates Life For IT Industry

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> than second-class employees. Large companies In technology industries have increasingly adopted the practice of hiring programmers and engineers as independent contractors to avoid payment of employee benefits.

> This practice has lit the fires of a number of hot legal, tax, and regulatory issues, recently exemplified by Vizzadno vs. Microsoft, a classaction suit in which eight freelance workers prevalled (so far) against the software monolith after learning what benefits their cubicle-mates 90 that they did not.

> The Ninth Circuit Court of Appeals acted to protect independent computer industry professionals who lack bargaining power against corporate gains. The decision thrilled many programmers and other contract service providers; however, the predictably defensive response from the largest and most influential hi-tech companies is delaying total resolution.

These poor, beleaguered megacorps accuse the Court of attributing to Microsoft a Dickensian anti-labor attitude. Whether Microsoft is a benevolent glant or the Evil Empire, its political clout—and industry lobbying—may have influenced the granting of a rare, post-appeal, full court rehearing that has been recently announced.

Although there are only eight named plainoffs in Vizzaino vs. Microsoft, the class they repteaent may include hundreds of Microsoft
workers. The case has been widely reported the
press and is likely to be one of the most
important legal decisions to affect contract professionals and their employment relationships.

There has been much confusion and misinformation about the case, which is considerably more complex than its coverage the popular press would suggest. You can read it yourself from the horse's mouth at URL http://lwww.wcip.org/Fed-CV/Creatify8th/bopinions, where 9th Circuit Court decisions == available.

Roots II Controversy

Microsoft employs a core staff of technical and other workers which it categorizes as 'regular employees.' They receive a wide variety of benefits including the usual paid vacations, leave, holidays, short-term disabitity, health and life insurance, and pensions. Regular employees can participate in a 401(k) retirement plan is which Microsoft matches fifty percent of employees' eligible contributions, and in a stock purchase plan wherein they purchase company stock significantly below market value. Microsoft also pays various employment taxes for its employees. in required by law.

The plaintiffs were not short-term or partitime employees. Although initially lined to work as specific projects, after these projects were completed they had each been assigned, successively, to approjects. All but and of those named had been working for Microsoft for least two years. They were fully integrated into Microsoft's workforce and were required to work on site. Rather than being paid through Microsoft's payroll department, however, they submitted invoices.

Microsoft never officially communicated the regular employees' benefit plan to the plaintiffs. On the contrary, when they were hired each was told that he is she would be ineligible for benefits. All eight plaintiffs had signed statements describing themselves as independent contractors and acknowledging responsibility to provide for their imministrations, and benefits. Eventually, the workers learned of the bene-

Whether Microsoft is a benevolent giant or the Evil Empire, its political clout—and industry lobbying may have influenced the granting of ∎ rare, post-appeal, full court rehearing that has been recently announced.

The core staff is supplemented with a pool of programmers, engineers, and other mechnical workers who were classified as "independent contractors" or "freelancers," including the eight named plaintiffs. The company does not provide them with any of the benefits received by regular employees.

fits provided to regular employees Moreover, they learned that the heroic IRS had examined an oncluded that Microsoft's freelancers were not independent an example but were, rather, common-law employees for purposes of withholding and income taxes.





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In response to the IRS rulings, Microsoft began "converting" its ince pendent contractors That is, a tendered permanent employment offers to some. Other freelancers were given the option of terminality their employment relationship with Microsoft completely or conurs ing to work at the company = employees of a new temporary employees ment agency (a so-called job shop)

The job shop would treat the workers as its own employees and prothe employer's share of payroll taxes. However, the juin shop offered few perks, if any, and the workers would still not be eligible for the da puted fringe benefits. While some went along with this arrangement at least one, Donna Vizcaino, simply refused to deal with the job shop Microsoft promptly fired her.

Some of those fired or forced to work for the job shop sought judcial review of the denial of benefits. Microsoft, in the ensuing him tion, rejected the plaintiffs' claims for benefits, maintaining it was no

Freelancers were given the option of terminating their employment relationship with Microsoft completely or continuing to work at the company as employees of a new temporary employment agency (a so-called job shop).

The trial court sided with Microsoft, as follows:

First, the contract between Microsoft and the plaintiffs specifically stated that no benefits were provided by Microsoft. Second, because the terms of the [benefit] plan were not communicated to the plan uffs, they could not have become part of the contract between the and Microsoft. Thus, the plaintiffs had no expectation of receiving am

Following this defeat, the workers appealed (for technical reasons the appeal pertained only to certain benefits).

Microsoft's welfare benefit plan provided that "Each employee wh? is 18 years of age or older and who has been employed for six months shall be eligible to participate in this Plan," and defines "employee" 16 mean any common-law employee who receives remuneration for personal services rendered to the employer and who is on the United States payroll of the employer.

Microsoft conceded that the workers were generally common law employees who rendered personal services to Microsoft. Because the plaintiffs were all over age 18 and had all been employed for more than six months, the Court reasoned, "the issue before us is only whether

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Accounting continued

they were 'on the United States payroll of the employer." The term "on the United States payroll," however, is not defined in the plan.

The Court said that provisions of the plan should be interpreted in an ordinary and popular sense as it would be by a person of average intelligence and experience. It then turned to the 1980 edition of the Random House Dictionary, and found that payroll means "a list of persons to be paid, with the amount due

That was clear and ordinary enough for the judge, who concluded that Microsoft's benefit plan should reasonably extend to these freelancers. Moreover, the court would not allow Microsoft to argue a different definition for "payroll," saying that would merely create an ambiguity in the term "payroll." Under various legal principles, interpretation of an ambiguous phrase would be resolved in favor of the workers.

Because the plan extends participation to all common-law employees, the non-regular workers are entitled to enjoy the plan as would any of Microsoft's employees who are paid through the payroll department. The court found

(1) Even though the plaintiffs had signed papers designating themselves independent contractors, that label does not control their employment status; and

(2) If the signed papers were found to exclude the plaintiffs, this exclusion would conflict with the benefit plan, which provides coverage for all eligible employees, and could result in loss of the plan's tax-favored status.

Poor Mr. Bill

As explained in the dissenting opinion. Microsoft has a payroll department, and it has a Because the plaintiffs were regarded both by Microsoft and by themselves an independent contractors. Microsoft did not budget or pay for them through the payroll department

As freelancers, the plaintiffs worked for Microsoft with the understanding that they were not entitled to the benefits for which they sued. One legal commentator quipped, The Bible tells 100 it is a sin to hold a worker's wages overnight. It does not tell us that the worker must be paid something more than

Indeed contract technes typically assumeor hope—compensation is high compared III a regular employee's wage, to make up for the fact

they don't receive benefits. In essence, Microsoft may have felt double-charged, believing it had contracted to pay the workers a premium in lieu of benefits, and then finding out that # had to provide the benefits nonetheless. The plaintiffs may have realized a windfall.

Temp Workers Of The World, Unite

The Court of Appeals decision was written by Circuit Judge Stephen Reinhardt, who, by reputation, abhors abuses to which independent contractors are often subject.

Microsoft's strategy was to try to limit the case to a technicality over the meaning of the words "United States payroll" as used in many employee welfare benefit plans, ludge -Reinhardt, however, was more concerned with

Microsoft's employee benefit plans were set up the way they were in order to qualify for sub stantial tax benefits to the company Company intended to limit those tax llenefits only is employee plans that are nondiscriminators Now Microsoft wants to exclude some common-law employees but not others, yet suiretain all the tax benefits of a plan that does discriminate

The Ninth Circuit's decision was certain to be controversial. It has raised the ire of the emploee benefits industry, which rends to ally with be business. The decision threatens to complicate employers' compliance with qualified benefit plan rules, and raises the specter of major lab ities to employers who run afoul of minimus participation requirements, as well as threateing huge potential payroll tax habilities

Denzi

If you have supplied technical services on a long-term contract basis, you may be wondering if you should sue to recover the value of employee benefits that you never received.

The answer depends, in part, upon whether you wish to remain employable.

issues of contractual fairness when independent contractors have to deal with large corpo rations. He pointed see that the parties have unequal sugotiating power, unlike cases in which employment agreements are collectively bargained for if Microsoft ruled labor practices as it does the PC. it would be too easy for all employers to circumvent employee benefit coverage requirements and deny plan benefits to its common-law employees.

Conservative commentators hold that the court's decision amounts to a flakey interpretation of a contract. They find it hard to see ambigully in an employment agreement specifying that employee benefits are not part of the compensation. Following this reasoning however, Microsoft might then be exposed to disqualification of its benefit plum by the IRS, for failure to meet minimum participation requirements

Oakland labor attorney Arthur Lazear wenter not offer Microsoft a single byte of condotence Society and the government have a substantil interest in labor contracts. The Can Labor Standards Act and child labor laws are designed to grant rights that cannot be given up it response to pressure from employers ERISA the legislation that protects the right of workers to obtain benefits, is similar legislation

Don't Try This At Home

If you have supplied technical services on a long-term contract basis, you may be wonder ing if you should sue to recover the value of emplayee benefits that you never received The answer depends, in part, upon whether you wish to remain employable

The named plaintiffs in the Microsoft case represented perhaps hundreds of workers who

Solutions

Accounting continued

the court certified as a class, and who are able to maintain a degree of anonymity In general, however, many employers may tend to disfavor engaging applicants who are apt to turn around and sue them. Ordinary consultants who depend upon goodwill and personal relations to a small business community should be cautioned before attempting such a feat

Tim Hoffman, another Oakland attorney speculizing me employment and benefits lingation, says the system makes it all too easy for very large employers to have their way with workers who don't bargain collectively. The most powerfol tool now available to curb abuses after the fact is a class-action lawsuit.

As more such actions are brought, however, employers will immunize themselves with new defensive factics. Ultimately, Vizcaino vs Microsoft could prove a mixed blessing for Independents.

Already, many contract techies complain that it's hard to get hired unless you're incorporated

This case could be to turn up the screws. For the small service provider to incorporate and navigate around a host of complicated restrictions are supported by the strength of the strength o

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MICROTIMES + JUNE 25, 1997 101

BY ROYAL III FARROS

The Making Of An Internet Startup: Part IX

Assessing The State Of The Internet

Quick iPrint

Update: More strategic partnerships. More Web site awards. More happy customer letters. And a lot more work to do in front of us!

The State of the Internet Message

The best summary of the State of the Internet is the cover of WebiYeek a few issues back. The cover story on the left talked about the bankruptcy of high-flying Jim Manz's Nets. Inc. On the right the story told of the insatiable demand wall Street for the Amazon com offering.

Actonyms are colliding: GBF means "Go Broke First" as much as it means "Get Big Fast." It's the infamous "Internet Time" at work. In fact, if M.C. Hammer recorded "Internet Time" instead of "Hammer Time" a few years back, he would have filed for bankruptcy before the video was released. (What's the worst lyric to a creditor's ears? "Can't touch this!")

Or maybe in means that the industry is going

Acronyms are colliding:

GBF means

"Go Broke First"

as much as it means

"Get Big Fast."

It's the infamous "Internet Time" at work.

through another one of those all-important, transitional "infection" points? Clearly some companies == "getting it," that is, figuring out how to do business on the Internet, while others have just learned how to efficiently go through gobs of venture capital with little to show for the

Here are some general observations and hard-fought lessons as we circle the mid-way buoy of 1997

Living On Internet Time

If Einstein were still around, he might have restated his famous equation to "E=ml2" where "I" is the speed of development on the Internet, sometimes considered as fast as light.

Things on the Internet are instantaneous, at least relative to doing business for the desktop. Like a shark, smart companies do everything it takes to keep moving forward. Those that lose momentum suffocate.

of course, we all know this is the case for development. But everyone's marketing and sales departments should feel fremied as well. The smart companies are taking handfuls of spaghett and throwing them up against the wall to see what stokes. Experimental relationships Experimental promotions. Experimental price schedules flee, this is the Internet: if it doesn't work, it's easy to change—and fast

II At First You Don't Succeed...

It's well-chronicled that Microsoft pulled off one of the most stunning and spectacular feats in all of business history when it was able to turn on a proverbal dime. Literally, overnight, Microsoft became an Internet company.

All of a sudden Microsoft's previously infalli-

ble strategy seemed tired, so Bill fixed it, even though he had a lot more momentum agains this change than almost everyone combined in the software marketplace Motherbo support E 16 MB EI 1.6 GB EI

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Like Microsoft, Internet winners are constantly revisiting their objections and evaluating their progress. Once an admirable trail, dogse determination is simply putting some companies in the dog house. Recently, however, I give he sense that this is happening at heightens levels. Almost everyone I speak with is 'reviewing' their business propositions. (Another did we're at an inflection point.) While this is short term bad news for the industry, the smart companies that are doing this stand the best chance for survival in the mid- to long-form.

Banner Blues

After a few months of light advertising, I can say with certainty that a fast way to lose money is to do a little advertising. Unfortunately, you can't scale to critical mass just by raking small bites. This presents a difficult ditemma for all of us trying to be sensible with our investment dollars. We need to get our name out in front of the public, but we're not ready to go broke doing sa

We're taking a fairly disciplined approach when a comes to advertising. We're experimenting, and we're tracking. There's no doubt that we'll eventually spend a lot of money on banners, but we'll do it when we get a sense of what will work and what doesn't.

Will we miss the opportunity to establish outbrand identity before other competition comes into play? Possibly But given our aggressive a partnering and press strategies, we'd like to think we're taking the effective, balanced approach. We want to Get Big Fast, not Go Broke First.



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The Making Of An Internet Startup continued

Fears Unfounded

We were warned that we'd lose a lot of business if we didn't supplement our Web shop with an 800# or fax# to take orders for people who were worried about credit card issues. One person even said the loss could be as high as 50%!

I'm happy to say that the buying public is past the media-driven credit card security scare. We've gotten about a handful of emails from people who said they weren't ordering because there was no alternative to entering a credit card online, an insignificant number relative to our

TERS RIGHT OUT OF THE BOX

total orders to date. Indeed, people like doing

One important note, though, What enables this trust is responsive, "no bull" customer sq vice. Everything from answering customer emails quickly, to getting the goods delivered as and when promised People don't trust technol ogy; people trust people

The smart companies are taking handfuls of spaghetti and throwing them up against the wall to see what sticks.

Experimental relationships. **Experimental** promotions. Experimental price schedules.

Hey, this is the Internet; if it doesn't work, it's easy to change and fast

The State of the Internet

All the signs are positive but the dollar sign The only "magic formula" that's working 15 96 ing the building blocks to existing Internet con

This doesn't mean that e-commerce isc working... it most definitely is! But, like an business, it takes time and intelligence grow. The best news that I can report about the State of the Industry is that for the first time that I can recall, internet companies att finally thinking with their business hats and not their bank accounts. And that's a great sign for the future.

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This series of articles in chronicling the ups downs of a new Internet business. You can visi iPrint, inc at http://www.iPrint.com and email Royal at farros@iPrint.com



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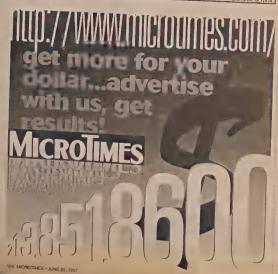
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The Wireless Market Evolves

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-George Gilder, "Telecosm and Beyond Over The Paradigm Cliff," Forbes ASAP, URL: http://207.87.27.10/osop/97/0224/029 htm

At last month's CSPA (http://www.cspa.com) conference on "Emerging Platforms for Interactivity and Connectivity," Unwired Planet (http://www.unwired-Planet.com) CEO Alain Rossmann demoed his companost and the company of the compa

ny's schoology to an intensely interested audience. Partnering with a number of celoss with wireless offenige, Uniwer Planet helps turn a cellular phone to a universal communicator. In a real-time, nonconned demo, Rosamain got is the Internet with his cell phone, checked and answered email, made calls requested in said email, and incidentally researched more listings in Tacoma. He didn't make retervations, but he could have.

The burning question on everybody's mind was where they could go buy one of these fine gumos. The answer, alas, was that for the present, the product as only available to corporate accounts in large quantities; the consumer-market implementation is 500 some time away. Nonetholess, between potential business partners and prospective customers, Rossmann was mobbed.

As Rossmann's in a fine postuon attest (longume readers will recall his appearance am our cover in January 1993 touting the EO Personal Communicator, which disappeared with its parent Company into AT&T shortly thereafter), wireless communications represent a hot, promising, and Perious market.

Indeed, as suggested by the cover story on Hedy Lamarr, whose 1941 invention is only now coming into its own, it's very difficult iii predict where and when technical excellence, clever application, con-

sumer demand, and affordable pricing will converge in a successful product.

Hordes of hopeful vendors pursue the holy grail of unesthered communications with pagers, cell phones, PDAs, wreels modems and a host of other devices, but for every successful breakthrough (e.g. U.S. Robotus: Palm Plot) there's myraid of promising but failled products: On the other side, entire mobs of would-be customers pursue the impossible dream of finding an affordable product that does conceing dreay actually need, as contrasted to a cool toy. In the middle man a lot of problems and solvenors in search of each other, with the advent of the intermet adding a frenuted quality to the quest.

So far, the successful companies to be finding a manageable inche—whether its high-end global communications or consume-oriented New Excessmether than attempong to solve buge problems. The entire market in clearly in its infancy, its growth simultaneoutly driven by huge problems demand and impried by very real technical and economic factors.

Not long ago, Dare Hughes (dorre@oldcola.com), Not long ago, Dare Hughes (dorre@oldcola.com), often featured in these pages as a orielized advocate and, implementer of spread-spectrum echnology in the unlicented frequencies and it disundess defender of their frequencies and its disundess defender of their license- and fee-free soons in the face of FCC auction plants spoke at a meeting of Smart Valley in Palo Alto.

At a time when telephone companies were been aming the fact that demand for internet connectivity as fact that demand for internet connectivity as fact exceeding their about to supply service and suggesting that the next infrastructure update should be financed by imposing higher charget on ISPs. Highes demonstrated how denote updates the subject of the supply services of the supply supply supply the supply supp

Others in the wireless community, particularly those coming from more traditional and corporate-onented areas of the industry, see maintained that this "solution" is in fact fraught with technical problems and not commercially viable (See, for example, http://www.microtimes.com/debeta-html). Advocates see Colder, howerer, point to Qualcomin (http://www.qub.comin.com/and/and-oners.com/and

Even proponents of the technology recognize that there was still numerous problems to be solved, and in the interest of reality checking, was report on

Last year, looking at wireless internet access, we writted Metricom (http://www.metricom.com), whose Ricochet Internet service utilities spread-spectrum technology in a license-free band is allow low-cost wireless access For users lucky enough is live and work is the served area, this can list a goddend; how-ever, while Metricom works right and day to install more repeaters and to improve service, performance varies is good deal according to geography and network infrastructure.

In sum saturated with repeaters, the technology performs really well—at the CSPA conference, PointCast (http://www.pointcast.com) executive Joseph Pstartto demoed his product on a Ricochet-equipped laptop, which, on the Stanford campus, sum quite summer.

Ricochet customers will soon have the option of using it fister and immiss compact radio than the current offering. Meanwhile, other companies (e.g. Breezecom, http://www.breezecom.com) immission other devices immission take advantage of the unificated spectrum to deliver T-I speeds immissional immission of the companies of the unificated spectrum to deliver T-I speeds immissional immissional immissional control of the companies and immissional control of the companies of the c

For an arduous test. Dewayne Hendricks reports on installing wireless networks in Mongolia.

Spread spectrum in not [23] only promising technology for untethered communications, and many specialized solutions are likely to assess from many proceedings.

The telcos are far from Idle, offering a sum of voice and the options based on a variety of technolom at a warrey of price points. Paralleling the development of the Internet is a growing range and options, from the fast and pricey to the more podestran a "a me affordable Infrastructure and plumbing issues, to say nothing of technical problems, will sum significant sustains the next decade—but there is a high game to device solutions.

As Gilder says in the same article. "With real size less market share will well under 5% or telephony and under 10 in internet masses the race has just begun."

-Mary Eisenhart



How "The Bad
Boy Of Music"
And "The Most
Beautiful Girl
In The World"
Catalyzed A
Wireless
Revolution
—In 1941
By Arma Coucy

OPPORTUNITION OF THE PARTY OF T

The Birth Of Spread Spectrum

oday, spread spectrum holds the poten tial to revolutionize wireless communications, because it renders radio spectrum-a resource currently deemed au precious that only the largest of corporations can afford to buy it-plentiful enough for all of us.

Spread spectrum is a highly efficient way of using radio waves to communicate. because it enables multiple users to share radio frequencies at the same time, without interfering with each other. Up until now, each radio station, for example, has been

allocated a specific frequency over which to broadcast their programs. Since there are only so many bands of frequency within the untire radio spectrum, frequency bands are carefully allocated by the FCC for particular uses-such 1881 commercial broadcasts, military communications, police radios, ham radios, etc.

Currently the US government licenses radio frequencies to the highest corporate bidder. Spread spectrum stands the concept of spectrum scarcity on its head, and just might rearrange who has access to radio waves in the future. For now, spread-spectrum radios provide high-speed wireless access to the Internet, with absolutely no telephone fees.

However, like many technology inventions, spread spectrum was designed for an entirely different purpose. The story of its birth and evolution is an epic drama of legendary proportions. World War II, avant-garde music and

Hollywood all had a role in its creation

At the center of the story is a beautiful young woman, whose creativity and intelligence led her to revolutionize communications technology into the 21st century.

The Road To Hollywood

Today, Hedy Lamarr lives in quiet seclusion in Florida, During World War II. however, she was a glamorous Hollywood star, "the most beautiful girl, in the world." Her real-life story is arguably more alluring, and certainly more heroic, than any role she played on the silver screen.

Born Hedwig Maria Eva Klesler in Vienna, Austria, sometime between 1913 and 1915 (history is not definitive on this point). Lamarr came to Hollywood shortly before World War II at the invitation of Louis B. Mayer and Otto Preminger to work for MGM. She had already made a memorable impression on the big screen for her revealing performance in Extase (Ecstasy), a 1933 art film that shocked societal sensibilities of the time for

Behind the star image lies a complex person who defies stereotypes. Lamarr married six times and, besides being an actress, painted abstract works of art and designed inventions. "People assume perhaps she wasn't intelligent because she was so beautiful. But she really had a mind ...she held her own with anybody," says Peter Antheil, who remembers her visiting his parents' home when he was a child

In Hollywood, the beautiful actress found success, and the world at her feet. But she didn't forget that World War II was brewing in Europe, and she was determined to do something about it. 108 MICROTIMES - JUNE 25, 1997



Mireless

"People assume perhaps she wasn't intelligent because she was so beautiful. But she really had a mind, she held her own with anybody," says Peter Antheil

Technology And War

Lamarr had strong personal reasons to be against the war. She had recently escaped from her first husband, who was selling

Fritz Mandi was one of Europe's largest armaments manufacturers. He had become the primary supplier of armaments to the Austrian army during World War I, when it later turned out, he and Austria violated the Versailles Treaty by selling weapons to Hungary. Moreover, he appeared to be developing a reputation for selling bombs

and bullets and airplanes to Hitter and whoever else wanted to buy them," as Anthony Loder. Lamarr's son, describes it

Lamarr and Mandl married in 1933. It was not a happy marriage, at least as far as Lamarr was con cerned. Mandl was extremely possessive, and kept her "like a slave," she says, under the watchful eye of her maid. To the public, she was Mandi's show piece, dazzling his clients and the cream of Austrian society. But Nazis were am the rise, and Lamarr had we use for them. She didn't just sit pretty

Mandl was conducting research in weapons control systems. At the time, research was indicate ing that radio waves were better than wire for controlling weapons such as torpedoes. For one thingit was hard to make a wire long enough (even ten miles was too short) to ensure that the communi-

cations channel between a commander and a torpedo would not break leaving the torpedo to chart its own course. Radio waves solved the problem of needing a physical communication connection between comman der and torpedo. But radio waves had a serious flaw: enemies could access the same radio wave and jam it.

As Mandl's wife, Lamarr was exposed to military technology ideas. By her own account, Mandl kept Lamarr at his side during his business meetings, a silent witness to technical discussions that foreshadowed World War II. Lamarr had no formal education in military technology, but she had a mind capable of understanding what she heard.

After four years of marriage to Mandi, Lamarr drugged her maid and left him forever. She made her way to London, where she came in contact with Louis Mayer of MGM, who arranged for her to come to the US. On the voyage across the Atlantic, Mayer gave her the name "Hedy Lamarr," in part inspired by the actress Barbara LaMar, and *__for the seal, *_Lamarr's son, say>

Player Piano

Lamarr met George Antheil at a party in Hollywood, and they became friends

"George was 5' 3" maybe, he was not very tall, but he was extremely charming—especially with women, says composer Charles Amirkhanian. who manages the George Antheil Archive

Antheil had been at the forefront of experimental music in the 1920° part of the first generation of artists that explored mechanical music as an expression of industrial society. George was one of the first people (0) work with the player plano as a legitimate instrument for composed music," says Amurkhanian. Antheil's famous "Ballet Mecanique" was writcontinued on page 112

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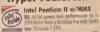
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The Birth Of Spread Spectrum

ten for twelve player planos. airplane propeller and a symphony,

Antheil was quite famous in Europe, and had done a lot of creative work there. In the early 1930s, he had received a Guggenheim fellowship to go to Europe. But when Hitler began to close the German opera houses that presented modern music. Antheil returned to the US. Not only his own source of work threatened (these very same institutions were among those who commissioned his compositions), Antheil "was very angry about Hitler's influence on the seem in Europe. He actually had as leave Europe because of Hitler, or felt he did." says Amurkhanian.

Antheil also emphatically opposed the Nazis. His son Peter remembers, "My father wanted to go into the army, but he couldn't he was too old. But he wanted to do anything he could to help the war effort. I remember that they felt very strongly about it, both Hedy and my father, about war, and having to defeat the enemy."

In that context, Lamarr told Antheil about her idea for a Secret Communications System that could guide torpedoes to their target without being intercepted by the enemy, by sending messages between transmitter and receiver over multiple radio frequencies in a random pattern. The message would move a quickly across the radio waves that anyone tuning in to a particular frequency would only hear a blip, and would be unable to intercept the message.

The only problem was how to ensure that the transmitter and receiver would stay in synchronization as they moved through the frequencies. Lamarr thought Antheil could help solve the synchronization problem. As a result of his musical experiments. Antheil had a good deal of experience with sound synchronization.

He wal indeed hit on the solution for the invention to function: paper rolls perforated with a pseudo-random pattern would delineate the frequency path. Two rolls with the same pattern would be installed in the transmitter and receiver. If the two rolls were started at the same time, and one stayed at the launch point while the other was launched with the torpedo, and *if you had good rotary stability must the motor driving the paper rolls, you'd maintain the synchronization right on down to where the torpedo hit the ship," explains Dr. Robert Price of Consulting in Electronics Systems, Just like the player piano rolls in "Ballet Mecanique;" in fact, the two inventors designed their system to use eighty-eight frequencies—exactly the number of keys on a piano.

Patriotism And Barriers

Lamarr and Anthell knew they had something that could help win the war. They sent their invention to the recently established National Inventors Council, and Antheil claimed that Charles Kettering himself, director of the Council and research director at General Motors, encouraged them to patent it. The two inventors worked with an MIT electrical engineer to iron out some technical kinks, usall submitted their patent proposal in-1941. On August 11, 1942, Lamarr and Antheil were awarded US Patent



Mereless

In Hollywood, the beautiful actress found sources, and the world at har feet. But she didn't forget that World War II was brewing in Europe, and the was determined

Mandl and Lamarr on horseback in the mid-1930+

Number 2,292,387 for the Secret Communications System Rather than develop the patent

commercially, "they gave it away to the government for the war effort," says Peter Antheil. Despite the fact that they studd to gain financially by holding onto the patent-and Antheil in particular was always struggling financially-like many people in that time, they were both committed to helping to defeat the Nazis. 'It was a totally different culture then. I was remember it even as a small child, and it was kind of a reflection of the way people felt in those days for George and Hedy is give the invention in the government to help win the war with there was a tremendous feeling of patriotism," recalls the younger Antheil.

The Navy, however, refused to take the Secret Communication System seriously. Technologists questioned whether the paper rolls would hold without breaking, whether the rotary motor that synchronized the rolls would be accurate enough. and whether the paper rolls could be made small enough in fit inside a torpedo.

Despite Antheil's active lobbying and insistence that the US Navy needed the invention to compete with Germany's sophisticated military technology. the Secret Communications System was never used during World War II.

Antheil was convinced that the Navy's reticence was due to an anti-cultural bias: "In our patent Hedy and I attempted to better elucidate our mechanism by explaining that certain parts of it worked like the fundamental mechanism of a player plano Here, undoubtedly, we made our mistake. The reverend and brass-headed gentlemen in Washington who examined our invention read no further than the words 'player piano' 'My God,' I can see them saying, 'we shall put a player plane in a torpedo.'

Not only was the invention rebuffed, but m were Lamarr's efforts to contribute her considerable technical abilities to the task of defeating Hitler. When she offered to come to Washington, D.C. and work at the National Inventors Council, she was told she'd be of greater service to the war effort by remaining in Hollywood and using her star status to raise war bonds. She did indeed raise \$7 million for the war effort, but her intellectuatalents remained untapped

From Navy To Commerce

When the war ended, Lamarr and Anthell put the invention behind the $^{\rm III}$ It was not to be implemented in Antheil's lifetime.

However, while seemingly inactive, the patent was not forgotten. Electronic technologies were beginning to develop, and in the 1950s, eng neers from Sylvania Electronic Systems Division began
experiment with the ideas in the Secret Communication System patent, using digital components in place of the paper rolls. They developed in electronic spreadspectrum system that handled secure communications for the US during the Cuban Missile Crisis in 1962. By then, the Secret Communications

communed on page 116

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The Birth Of Spread Spectrum



gentlemen in Washington who

examined our invention read no

further than the words 'player

piano." My God, I can see them

saying, 'we shall put a player

piano in a torpedo."

It was in the early 1960s that the term "spread spectrum" began to be used. Today it refers to radio communications that employ cryptographic subsystems (like the pseudo-random patterns on the Secret Communications System's paper rolls), use a wide frequency spreading factor (much wider than typical voice telephone communications), and are not dependent on a particular type of tonality (such as a human voice) in the transmitting waveform.

"Hedy Lamarr and George Antheil were the first to satisfy all three ingredients," says Price. Their spread-spectrum technique is today called "frequency hopping" because the transmission jumps from frequency to

Initially, spread spectrum remained a military communications technol-

ogy, and even today "the Defense Department of the United States has a huge investment in spread spectrum of a frequency-hopping type now, just like Hedy Lamarr's, which protects our assets all over the world," notes Price

In the mid-1980s, the US military declassified spread-spectrum technology, and the commercial sector began to develop it for consumer electronics. Today, it's an increasingly important component of mobile telephony. CDMA (Code Division Multiple Access) technology uses spread spectrum. Spread spectrum has proven highly useful in cellular telephones, because its

inherent encryption guarantees better privacy for cellular phone users. The technology has also proven to be an extremely efficient method for using radio waves. Rather than requiring each transmission to use its own frequency, spread spectrum enables people to simultaneously communicate over the bands of spectrum without appreciable interference. Thus, as record people buy cellular phones, the increasing demand for spectrum can be accommodated by sharing the same frequencies

Spread Spectrum And The Internet

Spread spectrum's efficient use of available bandwidth also holds great potential for connecting small rural communities and other outlying areas

Phone companies much prefer is ay the wires for internet connections in densely populated communities, where the economies of scale give them a large customer pool. While such a solution may make business sense for phone companies, it could have a devastating social impact by further isolating those outside the served areas from participation in the growing information economy the problem is further exacerbated as national telephone systems around the world give way to privatization, for telecommunications companies unlike governments, have no obligation se provide a baseline of seems to all

Once again, wireless technology appears as he more practical than wire by reducing the need to lay expensive cable across vast distances. Of the wireless technologies currently available spread spectrum & affordable and experiments are proving that it is effective. The Latvian besearch

Recognition At Last:

Hedy Lamarr & George Antheil Receive EFF Award

A MERE HALF CENTURY AFTER HEDY LAMARR AND GEORGE ANTHEL broke through the conceptual impasse in remote weapons control and invented spread-spectrum technology, they were belatedly honored for their achievement

The Electronic Frontier Foundation gave the two inventors is special award during its sixth annual awards ceremony at the seventh Computers, Freedom II "The reverend and brass-headed

Privacy Conference in March Lamarr's son, Anthony Loder, received the award on the famed Hollywood actress' behalf, as she was unable to attend the ceremony. Charles Amirkhanian, who maintains the George Antheil Archive. received the award m behalf of the late composer.

"fronically, this tool they developed to defend democracy half a century ago promises to extend democracy in the 21st century," notes Mike Godwin, staff counsel for the Electronic Frontier Foundation

Spread spectrum # # wireless communications technology that utilizes radio waves to send communications from one person to another. Historically, radio waves have been considered to be a limited resource. The quantity of available radio waves in divided into bands of frequencies. Currently, the US government licenses the right to control a particular band of frequencies to the highest bidder—typically a very large corporation. A single radio station, for example, is allocated a

particular frequency in broadcast its programs. With the advent of wireless consumer communications devices, such as cellular phones. demand for access to the airwaves has increased

However, spread-spectrum technology works effectively over a range of frequences heretofore considered unusable, thus opening up a whole new territory for wireless communications. At the same time, spread spectrum allows for the sharing of frequencies, so that it actually reduces the scarcity of radio waves to such an extent that the old system of treating bands of frequency as high-priced and estate is becoming obsolete.

Lamerr and Antheil gave their invention to the US government as help with World War II Unimplemented until 1962, during the Cuban Missile Crisis, and classified as a multary secret until the 1980s, spread spectrum and its glamorous origins have been obscure, known only to a few highly technical specialists Lamarr and Arithful have never received any financial remuneration for their invention, most though today it is used in over forty commercial products

The Electronic Frontier Foundation presents awards : "recognize Individu als who have made significant and influential contributions as the development of computer-based communications or to the empowerment of individuals in

The Electronic Frontier Foundation received the award nomination for Lamarr and Anthed from Dave Hughes, who learned of their invention while conducting wireless research with a National Science Foundation grant. Highes investigated story and posted his findings in the WELL online conferencing system, where the press picked up the story. Numerous seconds to the account of quickly fol-

On hearing of the award, Lamorr seem quick-tongued, said, "its about time"

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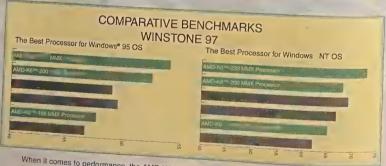


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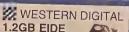
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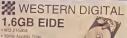
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The Birth Of Spread Spectrum continued from page 114

The system has been in operation for three years, and its develop believe that LATNET's experiences "should be of interest to net workers of developing countries where communications infrastive ture is weak and wireless communications are not over-regulated Wireless IP networking might be a cost-effective solution also in industrial areas of the world." Guntis Bardzdins and John Tully have published a paper describing LATNET's setup on the Web at http://www.latnet.lv/latnet/radiolink/HTMLDocument.html

Dave Hughes (dave@oldcolo.com) agrees. Well-known on the dectronic frontier for his work to bring affordable Internet access to eth nically and economically marginalized communities, Hughes has received a National Science Foundation grant to investigate wireless Internet connectivity for rural education. He maintains the NSF wire less project test site that documents wireless Internet access projects in the US (as well as a archive of information about the Lamare Antheil invention) at http://wireless.oldcolo.com . Hughes' experi ments in establishing affordable internet access, both in public schools in rural Colorado and in Mongolia, have convinced him that spread spectrum is the technology to bring cost-effective Internet access to the far corners of the earth.

Hughes likes to point out that even today, one can access the internet using a spread-spectrum radio at a T-1 level connection with out incurring any telephone charges or monthly service fees, "just the cost of the radio "

Spread spectrum in affordable because for one thing, it makes spec trum plentiful. "The latest studies at MIT (Ph.D. Thesis by Tim Shepard, 1995) prove that millions of radios can operate simultane ously in the same space in metro(politan) areas. Which overcomes the main limitation of radio, which is that radios interfere with each other if they are in power range of each other," says Hughes

With so much spectrum available, the current FCC practice of lice. ing specific bands of frequencies to specific corporate users is of ques tionable necessity. As Hughes pointed out to the FCC recently, it's sample not a cost-effective way to bring rural communities onto the Internet

Now that we have, for the practical purposes, and unlimited spec trum," exhorts Hughes, "let's get serious about using the 'public spec trum' for 'public purposes' like connecting up all 84,000 schools to the nearest POP (Point of Presence—an Internet node), and all filty-five million students at home, plus three million teachers, to the school servers, free Just buy the radios, not the services. And save the taxpal ers—for the T-1 link from the schools only, about \$16 million a month which otherwise will go into the pockets of the telcos, whose 'nght to such income I really don't see in the Constitution.

For The Common Good

Once again, spread spectrum is in a position of potentially making a tremendous contribution to the public good. It's not exactly wind Lamarr and Antheil had in mind when they invented the Secret Communications System, but, Anthony Loder says, his mother is glad that she "did something that could be good and useful for people, and for the country, and for the world "

And it has only taken in years for us to realize that the unlikely col laboration of a celebrated movie star and an avant-garde composer could possibly invent a communications system that is still at the forefront of telecommunications technology. Copyright @1997 by Anna Coucy: All rights reserved.

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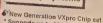
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n Ulaan Baatar, Mongolia, severe weather conditions prevail, the wired telecommunications infrastructure is very poor, advanced telecommunications technology expertise is limited (although there is considerable local computer expertise), and US access III Mongolian scientific and research facilities — highly constrained by lack of normal Internet connections.

Last year, some of us went to Mongolia to integrate a series of data radios into a wireless network, and then field-test them. Our purpose was to build on and apply knowledge being gained from the "Wireless Field Test (WFT) Project for Education," (unded by the National Science Foundation (NSF) and run by Dave Hughes of Old Colorado City Communications, in Colorado Springs, CO.

The Problem

The expedition's mission was an attempt to remedy the lack of a suitable wared telecommunications infrastructure in Mongolia, including across its capital city—a problem typical of thousands of cities in underdeveloped countries "Suitable," in this case, means public or private circuits capable of carrying data with the reliability and bandwidths necessary for scientific research between institutions, increasingly equipped with advanced in-house computer and even local area networks.

As a result of this deficiency, the primary institutions in Mongolia, such as the Mongolian Technical University, the Mongolian Academy of Sciences and the many other educational facilities which reside in the capital city are inaccessible (via data link) to US crientific Institutions, researchers and students

What exists is a poor and obsolete government postal, telephone, and telegraph voice-telephone system, a holdover from when the Sowiet Union controlled Mongoba Efforts to use even late model error-correcting phone data-modems as hink the computers in the various institutions is only partially successful, since the non-digital circuits are so old it is difficult to maintain even a 14 Kbps connection with-

As a result of the first step to provide Internet access to Mongolia. NSF funded the establishment of a costly (872K/yr) satellite Internet link. This 128K link, provided by Sprindlink, only reached one set of computers in a single building, in the central part of the carty by direct warms. The PTT has neither the resources nor the expertuse to provide even the lowest speed (86kbps) wired circuits to connect the numerous other institution.

The "last mile" problem of connecting this

Wireless In Ulaan Bataar

Learning From A True-Life Mongolian Network Adventure By Dewayne Hendricks

satellite link to the institutions (actually about one to ten kilometers from the satellite ground station), which must then distribute the signal to their own wired intraneis, had so far defeated efforts to link it by local telephone facilities. In this respect, Mongolia a typical of scores of underdeveloped nations with a poor telephone infrastructure, too limited a adapt to modern requirements for institutional datalinks to and from other nations, especially the US Wireless datalinks provide one possible general solution to this problem, not only in Mongolia, but in many other countries.

Challenges

A number of challenges made this a difficult project, as well as one from which valuable lessons and techniques were learned for application elsewhere:

The weather is more severe in Ulaan Baatar han in the areas in Southern Colorado where our wireless field-test project has been implemented. High winds and average temperatures from -15° to -25°C for entire winter months will subject the radius, connectors, shielding materials, and antennas to extremes of cold and winter.

The question was whether is not economical commercial-grade radios and systems could handle the weather and give similar MTBF (mean time between failure) times to those systems operating in milder climates.

• Whether the electromagnetic environment from the equipment that easts ≡ Mongolia today, some from systems developed and deployed by the Soviet Union ≡ the past, ≡ a different technological regulatory environment, will affect the spread-spectrum dataradios that we intended to deploy, which were developed in the US and operage in environments controlled by FCC pules. Could the wireless network be integrated into networks made up of a mish-mash of US and foreign computer and peripheral equipment, and would interoperability be a problem?

Given the level of in-country expertise able to help install and maintain the wireless net work, could local personnel be trained sufficiently in a short period of time to handle the network in the future, with only the assistance of remote expertise to call upon for help?

Groundwork

The Mongolian government had permitted a group of Russian-trained Mongolian engineer. To form a private technology company DataCom Co., Ltd., headed by Dr. Dangassure Enkhbat, using facilities at a technical center once occupied by Soviet engineers.

The NSF had turned to this company-with limited liquid assets, but a suitable central facility in the capital-to provide the critical organizational link between the satellite-based Internet feed and in-country institutions In return for being able to eventually provide Internet service to private companies Mongolia, and being given control of the satel, lite groundstation, DataCom agreed to provide links to Mongolian public, scientific, education al, government, and library institutions for at least two years, at no cost. With initial funding from various sources, and with help from groups such E Sprint, PanAmSat, Comstream NSF and the US ambassador to Mongolia at im time, Donald C. Johnson, DataCom became the first Internet Service Provider in Mongolia III. December of 1995. (The top-level domain name for Mongolia is MN. DataCom maintains a Web site at http://www.magicnet.mn/)

Once the project was approved by NSF our first task was to determine what would be required for the expedition and what we'd have u do once we arrived in Ulaan Baatar to deplo the wireless network. We made use of maps videos and communications with the staff a DataCom, in order to determine exactly what types of radios would work in their environ ment, and what configurations and physica distributions of sites would be required for distribution of Internet services from the DataCom location. The plan was to install a basic wireless Metropolitan Area Network that would consist of eight sites, the DataCom site, and seven sites selected by DataCom. These were all universi ties, with the exception of the US Embassy

Based upon our experience in the WFT project we had made a preliminary decision to use unlicensed Part 15 dataradios developed and market ed in the US by a small Boulder, CO company

continued on page 235

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INTERNET - BY JOHN I QUARTERMAN

Texans Sue Spammer

ISPs Fight Back: The Inside Story

One month

opined about "Spam Considered Harmful." The next month we did something about it.

"Texans sue to recover damages for Internet 'spain', claiming electronic trespass and nuisance," says our press release of May 28, 1997 (http://www.zilker.net/ nospam.html). It gives a whole new meaning to the state anti-litter slogan, *Don't Mess With Texas.*

Who Are We Juing?

To quote the press release

"The suit claims that C.N. Enterprises and Craig Nowak of San Diego, CA, sent thousands of electronic messages selling informauon am "Free Cash Grants" for \$19.95. The ad's content was not only misleading, the lawsuit claims, but the company's email used a false return address, causing the electronic mail boxes of several Austin residents to overflow with returned copies of the junk mail

"According to the lawsuit, by using a false return address, those who send Junk mail over the internet can avoid the anger that results from this controversial practice. They can also avoid dealing with the thousands of "bounce" messages that result from sending amail to invalid or outdated addresses

"In effect," the lawsuit alleges, "C N Enterprises deliberately dumped tons of its



electronic garbage and pollution" into the Austin residents' mailboxes. The lawsuit claims that the use of false return addresses on junk email, and the resulting fallout on those who

own the addresses used, is illegal under the traditional common law sources of action of nuisance, trespass and conversion

Why Sue?

My connection with the case is as an owner. with Smoot Carl-Mitchell, of Zilker Internet Park (http://www.zilker.net). The spammer sent the spam through Zilker, thus using our computing and network resources to forward it to its numerous destinations.

Spam is a huge waste of time and resources and it has no benefit in in or our customers. Not just us, either. This was the FREE CASH GRANTS spam that probably

many of you, dear readers, got in your mail box. It was also sent through other ISPs after it went through Zilker.

At Zilker, since about January of this year, we had been getting increasing amounts of spam

Given the amount of time we've spent dealing with spam in general, the lawsuit is actually a small part of our anti-spam effort. We thought it was worthwhile in order to stop this spammer, to maybe collect a little compensation, and to set a precedent.

MICROTIMES - ARE 25, 1997

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MICROTIMES - JUNE 25, 1997 143

Texans Sue Spammer

This particular spam was the last straw on already overfull heap. It caused Zilker to but in elaborate spam blocks.

Given the amount of time we've spent dealing with spam in general, the lawsuit is actually a small part of our anti-spam effort. We thought it was worthwhile in order to stop this spammer, to maybe collect a little compensation, and to set a precedent. We've since sold most of the assets of Zilker to another ISP (although Zilker Internet Park, the corporation, continues to exist), so it's not even a matter of easing our ISP operations at this point.

This was also a particularly nasty spain. Like most spain, it had forged From: mail headers some of them werent even syntactically correct, and those caused settra bounces, some of which resulted in bounce loops between malers as far away as Australia. This made cleaning up the spain harder than it would have otherwise been.

Why Not?

The From: headers that were syntactically correct had the address of one of our customers. That caused our customer to get hate mail from people who thought they were writing back to the spammer. It also forced us to cut off mail from her domain temporarily in order to stop the spam.

In fact, the lead plaintiff in the case is that commercially the leading parker, author of books such as the early best-sceller The Internet Companion and the even earlier Internet Directory, which was one of the very first books about the Internet. With here business partners Patrick Parker (also her husband) and Peter Rauch, Tracy owns the domain flowers.com (http://lwww.flowers.com), which was the domain that appeared in the forged From: headers in the soam.

Parker says: "As a long-time Internet advocate, I am saddened that the goodwill spirit of the Internet is being spoiled by irresponsible individuals who forge their identity in order to make a quick buck. There are plenty of easiles of legistratate commercial uses of the Internet. This isn't one of them

Other Plaintiffs

Joining the Parkers, Rauch, and Zilker Intense Park are two organizations related to the Internet: Fexas Internet Service Providen Association (TISPA), (512)303-1021, URL http://www.tispa.org and EFF-Austin (512)444-5175, URL: http://www.eff-austin/bushes/tispa.org and tempt by the State of Texas to impose a 1% gross sales tax = ISPs, so it means business.

Gene Crick, TISPA's president, says "Increasingly, 'spammers' are using false return addresses to avoid taking full responsibility for the harm caused by their unsolicited commer cial email. These forgeries dump huge volume

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Texans Sue Spammer continued

ales and their customers. TISPA would like to see the court grant w broad and clear injunction prohibiting this practice."

The Counsel

Peter Kennedy and Roger Williams of George, Donaldson & Ford, L.L.P., (512-495-1400, URL: http://www.gdf.com) are our legal counsel. They're among the most experienced Internet attorneys and law firms in the country You may recognize them as the people who won Steve Jackson's lawsuit against the US Secret Service. They have agreed to take the case === contingency.

A Precedent

We hope to set a legal precedent. Even if we

don't, we hope in make the problem of spam

We seem to be succeeding, since even in the first day or so the suit was covered by Wired. ComputerWorld, the Austin American Statesman, and various other publications. Our press release is also prominently featured and the sendmail home page (http://www.send mail.org), and sendmail in the mailer most widely used by ISPs

The Spammer

As of this writing, this case is still in the legal system, so naturally I don't want to say too much about it, was about the defendant.

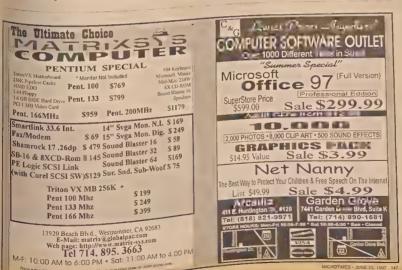
However, since he has already been quoted in the press is saying he didn't really mean to do it, let me just say that if someone is playing with an Uzi and shoots a bunch of people it doesn't help much to say he didn't really mean

Part of the problem with spam is that people

The From: headers that were syntactically correct had the address of one of our customers.

That caused our customer to get hate mail from people who thought they were writing back to the spammer.

It also forced us to cut off mail from her domain temporarily in order to stop the spam.



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Texans Sue Spammer continued from proces 147

don't realize how serious it is. We have a small group of people (hundreds, maybe a thousand) abusing key features of the Internet to the detriment of thousands of ISPs and millions of people. Nobody profits but the spammers. Lots of people lose. Spam won't stop until it becomes socially unacceptable to spam. We hope are helping to make that happen.

What Can You Do?

Well, the title of the previous article, "Spam Considered Harmful* is, as all good computer science students will recognize, a play on a famous article by Edsger Dijstra. "Goto

Considered Harmful."

I still fondly remember what he said when I offered him a UNIX account just after he took a faculty chair at the University of Texas. He did the same thing Donald Knuth of Stanford has done more recently. He refused to have an electronic mail address, so as not to get electronic junk mall. For those who don't recognize the names, these are two of the most eminent figures of all time in computer science, so one shouldn't take their opinions on this matter too lightly.

However, if your main occupation is not

mulling over deep issues for long periods of time, and instead you need ongoing contact with the outside world, shutting yourself off from electronic mail may not be an optimal solution for you.

If spam is as much a problem for you as it is for us, sue, if you can. If you don't believe it's a problem, or you don't know what technical fixes you can apply, read up on the subject For example, see http://www.mids.org/nospam/ and http://spam.abuse.net . Send us mall (spamsutt@zilker.net). Better still, write a letter to an editor, call a radio talk show, appear on television.

Or just don't agree the next time some body tries to tell you spam is nothing but business. It's not business, it's abuse. Let's stop it.

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ONLINE SERVICES - BY BILL GRAM-REEFER

Telco Shell Game

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Step right up folks!

Welcome to the Telecommunications Reform Act shell game! Place your bets and be a winner! Just watch the FCC and the Baby Bells and long distance companies like AFAT delty move the shells around the table. Just pick which shell holds the little ball. The little ball, of course, is real deregulation and protection from consumer ripoffs that you never are going in find, not in a million years. The shells are the government protected policy loopholes, back-scratching deals, and backroom abuse of customers.

See, we've got this thing called a telephone system. The public has paid for this system and its infrastructure many times over What teleo monopolies like PacBell (and AT&T before 1) do is say, "Himmi, what kind of ersate service == 1 create where I can charge outrageous fees for adding very little to what already exists and was paid for by someone else, and still get the state and federal regulatory agencies to endorse it and get them to call it a monumental saving to the general public?"

Case in point: The Baby Bells were charging local companies through the nose for "access" to the local lines and customers. Huge wandfall for the regional Bell operating companies (BBOCs)—more than \$23 billion annually, or half the sea of an average long-distance call For nothing—just "access." The (BBOCs) probably spent more to figure out how to hack a billing system for it than anything else Pureprofits But the long-distance companies passed these access fees onto their eustamers, se don't sweat for ATAT.

Now AT&T and others have convinced the FCC that these outrageous access fees were, well, outragyous, so let's lower them and we'll 184 MCROTIMES - 1/10/E 25, 1897.

pass the savings along to our long-distance customers. So it's still a wash for ATET, but now they'll give se the come-on that they've lowered their rates 5%. Meanwhile, the PCC lets the RBOCs replace the "lost" revenue from the lower access fees with something else—higher fees for additional phone lines. Let's say you've got 3-6 existing telephone lines for your home-based business. Zoom this, All of a sudden, those line that are already installed and paid for are now going to cost you \$150 more per year.

Consumer long-distance rates might decrease # whopping 8%, so businesses can expect to see lower long-distance fees. But in the end they'll watch their telephone bills go up because the cost of multiple business lines could go up by 22.00 per line Your local Internet Service Provider # probably at the neighborhood kinfe store browsing books on hara-kiri.

Let's say you've got 3-6
existing telephone lines
for your home-based
business. Zoom this:
All of a sudden, for no
apparent reason or
added value, those lines
that are already
installed and paid for
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\$150 more per year.

Don't forget the kids, either. The FCC deal also sets up a \$3 billion annual account for hotwiring the nation's other great incredibly inefficient gubbermint-sponsored monopoly the so-called non-discriminatory public schools. Supposedly residential lines are not priced at their true cost and am subsidized by about \$1.50 each. The FCC decided that subsidy money should go to the schools. So instead of finding the money for this program by asking the RBOCs run a tighter ship, they are good to gouge consumers instead. The money is sup posed to pay for anywhere from 20-90% af a school's Internet phone bill, depending on how impoverished the facility is, based on the num ber of students enrolled in the school lunch program. Non-profit, rural health care centers will have a similar pool of \$400 million

In a brief snit of sanity, the FCC rejected an RBOC proposal that would have imposed a 1-3 cents-per-minute tariff to Internet provider like AOL for access to local telephone lines in any event, these pricing mandates go lat beyond the scope of the Telecommunication.

Reform Act. Who needs Congress or out-of-control judges when you've got the FCC?

Even so, what == Reed Hundt thinking when he traded lower long-distance access fees for AT&T for the Baby Belts' increasing fees for etual phone lines to subsidize schools? Maybe he was thinking about how the more things change the more they say the same Despite the hoopla of the Telecommunications Reform Act of 1996. It's still the same old government-sponsored monopoly mentality that continues to assume archaic and Byzantine telco pricing loopholse customer-be-damned policies, and state-subsidized jobs programs disguised as school distincts. If you find any real telecommunication



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Online Services continued

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CompuServe Revs Up

CompuServe has revved up both its service and marketing. Not content to play second fiddle to

any of America's online services, the company has reorganized itself and plans to spend the big bucks to keep customers and win new ones. Five million current subscribers isn't peanuts,

First up in CompuServe's (CSi) reorganization of its online service into twenty-one distinct

areas or "communities." If you haven't logged on for awhile the new areas are: News and Weather Business, Professions, Research, Investing, Personal Finance, Computing Support Computing Pro, Health, Education, Arts and Entertainment, Society and Living, Travel. Sports, Home and Recreation, Sports, Games Sight and Sound, Internet, Communications Center, Shopping, and a Find/Search area, son of a topical Lost and Found

Within these communities CSi supports out 1,000 highly active online forums where mem bers with similar interests share knowledge. experience, opinions, and advice through teal time discussions, message postings, and through browsing the extensive file libraries available under each topic Additionally, the Forums and other content within each community provide links to related World Wide

This follows last fall's introduction of the CompuServe 3.0 client interface software which enabled pretty good integration of Co and the Internet. The software enables users to link to Web content directly from the new community menus. Later this year, CSI plans to offer a new version of itself, and utilizing internet standards. This will allow users to access the service via any Internet Service Provider (ISP) using any standard Web browser like Netscape Navigator. In this rev. each CS1 community will become its own Web site, which the users can access using some password. It will also help CSi focus on the work of accommodating more and more users and presenting the service in 3 more compelling manner, rather than trying to stuff open internet technology into its older proprietary architecture. The bet on the Web also allows CSi to market uself directly via the Web, opening up many new co-marketing opportunities with ISPs.

All of this comes after last year's corporate soul-searching in Columbus, concluding that business users were the company's main target customers Everything flows from that, including some study marketing dollars skipping the mass market in favor of a 2.5 million piece mail ing aimed at business, professional and rechncal users. Targeted advertising to sophisticated

Ongoing member communication properties work on member retention with up sheets email marketing, smal an online newsletter for advanced users. According to Scott Kaufman-



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Online Services continued

practically reading from any text on Integrated Marketing Communications-By understanding the specific criteria on which various segments of the market make their purchasing decisions, we anticipate that our marketing efforts will be much more successful than the mass consumer approach we tried in the past." Uh-huh

This Ole Web site

Check out the Web site of PBS's "The Antique Roadshow" (http://www.pbs.org/wgbh/pages/ toadshow/appraiseit himl). There you can find information concerning the show's broadcast

times for your area and information about the show "The Antique Roadshow" goes from town to town; its appraisers tell people who bring in their knickknacks that the trinket they've used for a doorstop for eight generations is worth \$12 million I'm always fascinated to see what people hang onto and think valuable

One of the links on the site provides an alphabetical listing of the various appraisers the show uses including that person's specialty. Another fink gives a brief description of the leading Auction Houses including Butterfield's, Christie's, Doyle, Skinner, and of course Sotheby's Another treat on the site is a monthly Despite the hoopla of the Telecommunications Reform Act of 1996,

contest called Appraise It Yourself. This contest shows a painting or some other object, and the through a series of questions about the object you guess at several critical factors-date of its painting, what is the nature of the smudge ida pine frame, etc. If you get all of that right you get to make your own dollar appraisal from multiple choice Monthly winners get a valuable prize, usually some reference work on collecting

The Antique Roadshow" is rather mobile will be visiting the Bill Graham Civic Auditoria in San Francisco am Saturday, August 9th Th site explains how you can apply to have larg items considered for evaluation by one of the it's still the same old government-sponsored monopoly mentality

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Online Guide

BY MICHELLE V RAFTER

Micropayments: Are They Finally Real?

Companies Polish New Offerings

Micropayments

haven't caught on an quickly as digital-cash vendors expected-but nobody's throwing in the towel Top players such as Digital Equipment, CyberCash and First Virtual are jumpstarting their respective efforts by signing far-reaching partnerships and boosting marketing programs to attract online merchants, and ultimately, consumers.

Micropayments, or microtransactions as they're sometimes called, collectively describe digital payment methods that stand in for hard currency-coins and paper money-in online transactions, usually involving small-ticket items of a penny to \$10.

Detractors say electronic financial transactions never fly-they claim people won't give up their paper money and plastic. But supporters believe the market for micropayments # enormous. Why? Think of all the things people buy in the physical world with cash-single issues of a newspaper or magazine, copies from a copy machine, postcards, movie tickets, CDs, and on and on. Now imagine how people would buy some of those same items online. Credit cards are overkill for many low-priced goods or services, the value of the sale isn't worth the creditcard transaction fee a merchant would incur.

Enter inicropayments. The newest is from Digital Equipment, which unveiled the Millicent micropsymeni system a Spring Internet World in Los Angeles Millicent consists of three laternet compatible parts, virtual wallet software consumers use to buy online content worth 1, thit is a cent in \$5, merchant server software for accepting payments and broketserver software for handling up transactions With Millicent, a consumer uses a credit card an debuts their checking account is pay a bank in other broker for scrip they can exchange online THE MICHOT WES - JUNE 25, THE

for information, services or subscriptions from Millicent-enabled merchants Merchants collect the scrip and forward it to the brokers, who reimburse them via standard electronic funds transfers or printed checks.

Using CyberCash's CyberCoin product, consumers can buy digital currency in \$20 increments with funds THINK OF ALL THE THINGS

PEOPLE BUY IN

THE PHYSICAL

WORLD WITH

CASH-SINGLE

NEWSPAPER OR

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AND ON, NOW

PEOPLE WOULD

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from a checking account as credit card, store it in a CyberCash virtual-wallet software program on their hard drive and use it online to pay for newspaper articles, games, digital and other goods and services.

First Virtual Holdings' payment system lets shoppers purchase one or many small items using a Virtual PIN-an identification number that stands in for a credit-card number-and confirm purchases via email.

A fourth option comes from Dutch-based DigiCash, whose US licensce is Mark Twain Bank in St. Louis. Consumers open a special world-currency checking account at Mark Twain, buy DigiCash's Ecash currency, store it at the bank or on their hard drive and use it to buy and sellgoods and services. IMAGINE HOW

How It Works, Who It's For

As with credit-card purchases. though the amount varies with the vendor. First Virtual, for example charges 2% of the transaction cost plus 25 cents. CyberCoin transactions operate and sliding scale.

Digital wants to put banks in the driver's seal of its three-part payment solution, which the

before launching a public trial in the summer. "Good (Millicent) brokers are organizations that are recognized by consumers and have a high degree of trust" such as banks, says Russ Jones, a Digital manager involved in the project.

Digital is purposely leaving many details of how the system will be implemented up to its broker partners, which an addition to banks could include internet Service Providers, national order services, and outside the US. gov ernment-sanctioned telephone and postal agencies, lones explains Those details include how a consumer pays for scrip minimum purchase amounts. minimum per-transaction fees brokers will charge merchants and how often brokers will reimburse merchants for scop they turn in

Digital expects to make 119 money selling broker and mer chant software Digital has alread) partnered with Bank of Ireland and Tele Denmark to act as bro kers for the payment system dul among 45,000 Web-enabled

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On the merchant side, Digital believes Millicent will be attractive to online publishers interested in selling information by the article, and to software publishers looking to sell Java applets and other software on a per-use basis in NC users. Already, Reuters and InfoSeek have signed on as content providers for the tests

Slow Start, Big Plans

For vendors who've offered microtransactions longer, the going has been slow. Since

CyberCoin's September 1996 launch, only thirty online merchants have integrated the payment method into their Web stores; another forty are still in the planning stage. In late March, CyberCash confirmed ESPN SportsZone and Playboy Enterprises would

incorporate CyberCoin payments on their respective Web sites for premium services and pay-per-view events.

One early CyberCoin merchant was Virtual Vegas, a Santa Monica gaming site that offers it as a payment option for buying some software and sports betting tips. "We've done a few thou sand dollars worth of sales at 25-50 cents a pop It's kind of a trickle, but we haven't been market ing it either. It's a chicken and egg situation, says David Herschman, Virtual Vegas president

France Telecom's Questel-Orbit division in Vienna, VA tested CyberCoin for four months

and expected to begin offering it by the code March as a payment option for searches als database of 1.8 million US patent application The holdup has been on our part, feed an our business model of how well charge for or content," according to Paul Albert, a Questi Orbit consultant

More than a million people have download! CyberCash wallets, but to date, only 5 000 has used them for CyberCoin transactions To bor that figure, CyberCash ran a \$10,000 sweet stakes from October through lanuary in differ ent promotion, First Union Corp., the country

#6 retail bank, is offering a @ branded CyberCash wallel or its Web site, and built a min on the site to get consumts

In another marketing effort, CyberCash plans:

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curinehouse for publishers, called Digital Vosstand, that will sell single-day subscripsons to the Los Angeles Times, Quote.com, Somberg, American Banker and other pubstations. The service, which will be promoted .n Yahoo!, Lycos and InfoSeek, requires that berthants insert a 100-line CGI script into their site that enables them to accept CiberCoin payments Sales will be split between the merchant, CyberCash and pronoters, "It's designed for merchants who are full struggling with their business plan for microtransactions," says CyberCom Product Manager Larry Gilbert.

Fresh from an initial public offering that raised \$18 million, First Virtual m pouring resources into marketing its Virtual PIN, which currently is offered by more than 3,000 mainly small merchants and used by approximately 200,000 consumers who each pay \$2 to register. First Virtual recently hired marketer Harte-Hanks Direct to funduct online and offline direct mail campaigns and create a buyers club that would give away merchandise and subscriptions to people who use the payment service

In another marketing move, First USA Paymentech, a major credit-card processor and

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First Virtual investor, in promoting the Virtual PIN in a consumer newsletter it publishes and has hired marketer Donnelly Direct to help reach its goal of signing up one million Virtual PIN holders by May 31.

"We've been hammering on the technology side of our business and how we're getting ready to launch as a marketing company. We're ready to take off," says Pierre Wolf, First Virtual marketing director

First Virtual also has high hopes for a deal with Microsoft, which is embedding Virtual PIN technology in Merchant Server Web commerce software expected to be released in

Despite their efforts, some Internet commerce watchers believe microtransactions won't become ubiquitous until software is included in Web browsers, a development both Microsoft and Netscape are reported to be working toward Others believe microtransactions will hit it big only when they're included in smart cards that people plug into a card reader attached to their home PC, load up with cash and use anywhere.

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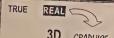
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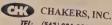




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Applied Arts Ltd. has released Easy Wedding Organizer 2.5 \$38. Applied Arts Ltd. PO Box 54 Needham, MA 02192 (617)455-1472 III URL http://www.ezwed.com

Deltec Electronics Corp has unveiled a new line of PowerRite Pro II Series Uninterruptible Power Systems (UPS) \$699 Detec Electronics Corp. 2727 Kurtz St., San Diego, CA 92110, 1-800-854-2658, mfa@deltecpawercom, or URL: http://www.deitecpower.com

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Product Reviews

PC Software Reviews

EasyCustomInvoices

Published By: MySoftware Company List Price: \$79.95

Review By: David A. Simon, CPA

This is an easy-to-use, inexpensive invoicing system. It can be configured quickly with a set-up wizard, enabling even the uninitiated to produce invoices quickly. The program requires Windows 95.

EasyCustomInvoices fills a special niche for simple billing software in a market dominated by far more complex and expensive packages Many sole practitioners or tiny business operators who bill infer quently simply use their word processor to create invoices-an awk ward approach that fails to track billings and receivables and automatically relate them to one another. The package is ideal for anyone who generate relatively few invoices or has simple billing needs, but wishes to keep track of any A/R they do generate and who wants 10 send bills that look sharp.

The program performs the basic accounts receivable functions-of tracks time and expenses, generates bills, and lets you log payments.

EasyCustomInvoices presents a handful of reasonable formats and selection criteria, cuts to the chase, and avoids most of the hassles of sel ung up and running full-bore accounts receivable software. In handling the billing process swiftly it foregoes the additional steps—and [63] tures-of other systems used by even small businesses.

For example, don't look here in select fee options or to keep track of multiple client matters under a single account. A solo more with many clients, for example, probably would find this package

Notwithstanding its entry-level territory, several features are notework thy. For product and service descriptions, you have your choice of tabular or paragraph format, allowing billers in enter unique narrative descriptions of contract the afficient of the second contract of the seco tions of services provided. The CD-ROM contains a thousand clip aff pieces providing logo options for the invoice heading. Existing client list can be imported from the invoice heading.

can be imported from other programs using standard database formals EasyCustomInvoices is a great solution for the consultant, independent dent contractor, or a small service operation that recognizes the importance of good record keeping and a professional appearance (MySoftware Company, 1259 El Camino Real, Ste. 167, Menio Park, CA 94025-4227, 1-800-325-3508. URL: http://www.mysoftware.com/)



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Spotlight

Product Reviews continued from page 184

HyperACCESS for Windows 95 and NT

Published By: Hilgraeve List Price: \$129

Review By: Matthew Leeds

Windows users have long been accustomed to getting a free terminal emulator as part of Windows. The HyperTerminal program included with Windows is written by Hilgraeve, which offers both a free upgrade and this commercial upgrade The commercial version HyperACCESS for Windows (HAW), fully takes advantage of 32-bit code for speed, long file name support, drag and drop, pop-up menus, docking toolbars, and help wizards. It also supports ActiveX scripting, OLE, VBScript, lavaScript, and DOM There's a full API for other tanguage compatibility = well

HAW offers a massive list of emulated terminals, Telnet, and hot-linking to Web sites, just double-click on an URL then right-click and select Shortcut to, and your browser gets launched with the URL You can drag phonebook listing to the desktop for quick access, and set up HAW as your default Telnet application HAW includes support for Microsoft's new Intellimouse It also checks downloaded files for viruses, including macro viruses, and it is decompress ZIP files on-the-fly

I'm particularly fond of the massive scrollback buffer, the spell-checking, the text editing and char windows, the 2-modern support, and the complete TAPI integration. The built-in graphics viewer (GIE IPEG, TIE PNG or other hitmaps) is useful as well Eve also found their technical support in be responsive. Check them out in http://www.hillgraeve.com (Hilgraeve, Inc., 11) Conant Ave., Ste. A. Monroe, MI 48161 1-800-826-2760)

RapidRemote For Windows

Published By: Quarterdeck List Price: \$69

Review By: Marthew Leeds Network managers are tired of getting out of bed and driving back work in the middle of the night as an network problems. Smart network managers quickly learn the advantages of remote management of network assets. One element of auch management is a remote control software package such as RapidRemote. MICROTIVES - MINE 25

QUARTEROLCE L

There are two ways to gain remote access to a network remote node and remote control. Remote node uses a dial-in server (such as a Shiva LanRover) ## duplicate the connectivity to the network for a remote computer, albeit at modern speed rather than Ethernet speed. This can work for some applications as long as you're not launching large applications across slow modem links. The other approach is remote, control, where you remotely control a computer on your network, and receive screen updates only across that slow modern link

RapidRemote takes advantage of Microsoft's Graphical Device Interface (GDI) to send function calls rather than bitmaps to update the remote screen. It supports TCP/IP or IPX/SPX network connections, serial connections, TAPI, and ISDN. It offers file transfers and directory synchronization, resolution and color scaling, remote printing, chat, and a host of security features that include password protection, logging, screen blanking, mouse and keyboard locking, and data encryption. The performance across a 28.8Kbps modern link is very acceptable

The current version is Win95-only but by the time you read this a free update that also supports Win 3.1 and NT will be out. Quarterdeck offers a thirty-day trial version on their Web site (http://www.quarterdeck.com), I was very impressed with how easy it was to install and configure, and how well it performed. Considering the price, it's me excellent value. (Quarterdeck Office Systems, 13160 Mindanao Way, Marina Del Rey, CA 90292, 1-800-683-6696)

PageNOW! for Windows

Published By: Mark/Space Softworks. List Price: \$119 Review By: Matthew Leeds

it seems like everyone has a pager these days, and many have alphanumeric pagers capable of receiving text messages. At one time you needed to call an operator and dictate a message in be sent to the carrier of an alpha pager, but these days all you need is a computer, a modem, and the right software Mark/Space's PageNOW! series is the right software Long avail

able on the Macintosh, this new Windows version brings the polish of m existing product to a new platform.

This version will work with Windows 31 Windows 95, and Windows NT It comes with a large number of configuration guides for commercial paging services, and is a breeze to set-up. You add pager users to a subscribe list, and can track multiple subscribers across multiple services. You can create group paging sets, add canned messages or compose messages on the fly, see previews of how the message will look on sample pagers, track how many characters a pager will display (PageNOW! will automatically break mes sages up into the maximum a given pager will support), and maintain and examine logs of messages sent

You may also add greeting and signature files to every page, schedule messages for later delir ery, and import/export lists of subscribers There is also a full DDE link so that you can pager-enable other applications

Mark/Space makes paging applications for the Web, for email systems, and for the Newton They make personal and enterprise paging software systems, and their experience with paging applications is evident in the polish this easy-10 use program evidences. (Mark/Space Softworks 111 W. Saint John St., 4th Fl., San Jose, CA 95113 408/293-7299. URL: http://www.markspace.com. pagenow_windows html)

Quicken Deluxe 6

Published By: Intuit List Price: \$59.95

Review By: David A. Simon, CPA

intuit's Quicken is the leading personal account ing software in use today by households and very small businesses. It tracks income and spending, and provides financial planning tools as well. The program also handles online bank ing, bill payment, and investment tracking

The Deluxe 6 version adds the latest genera tion of features, many of which are geared to accommodate services available through the Internet In tracking investment performance for example, it scans your drive to identify you browser (e.g., Netscape), logs on, and updates your securities portfolio. The investment track ing features install and run almost completely automatically. Stock quotes, by the way, are free for a year

For users who don't already have an Internet Service Provider, Quicken Deluxe comes with Netscape and Information on connecting to the Net Intuit also sees that the software is updated continued no page 132

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Product Reviews continued from page 188

via the Net at any point during the year with practically no user effort.

The interface meets expectations of those who think of instructions as something to be referred to only as a last resort. In such instances, however, help screens include audio coaching and on-screen animated video to demonstrate program features.

Other pluses in the new version are longer field lengths for account names and memos. This fix corrects a longstanding frustration that field sizes had been too small to adequately enter transaction descriptions that mean something to us inclegant, linear thinkers.

To prevent you from making frustrating mistakes, the program recognizes frequent errors before you acknowledge them, and prompts you with on-screen reminders, an you don't feel all alone with your bookkeeping.

A single CD contains both the Windows 3.1 and Windows 95 versions The Windows 95 version, being a 32-bit application, is designed to run faster. (Intuit Corp., P.O. Box 7850, Mountain View, CA 94039-7850 1-800-4-Intuit, URL: http://www.intuit.com/quicken97/)

Book Review

Running Microsoft Windows NT Server 4.0

By: Charlte Russel and Sharon Crawford Published By: Microsoft Press

List Price: \$39.95

Review By: David A. Simon, CPA

Running Microsoft Windows NT Server 4.0 provides practical guidance that is ideal for businesses looking to build a network based on

The NT network operating system has been around for several years. and through several versions. Only with the release of v4.0, however, has it begun to have a major impact on the corporate networking market in the market-share battle with Novell, NT is steadily gaining ground, particularly with small- and medium-sized businesses

What distinguishes this volume from other NT server books is \$10 practical and concise approach. Not only can the reader easily dip into it for specific information, it's alim a complete guide to planning and running a successful network. The first five chapters are, in fact, all about planning. The and of the book is step-by-step guidance on areas ranging from installation to disaster recovery to co-existence with Novell

The authors give straightforward advice on potential pitfalls, with an emphasis on how a manager can maintain both control and a userfriendly environment. Here, you'll find the most thorny concepts in networking such == domains, TCP/IP, and shares v permissions dis cussed with admirable clarity and Brevity. The language is only as technical as it needs to be, and descriptions are understandable the first

At just over 600 pages, it is designed for everyday use, rather than as a substitute for the rather daunting five volume Windows NT Resource Kit also produced by Microsoft Press. The Resource Kit is good for looking up technical specifications but when it comes to realistic advice and quick answers. Running Microsoft Windows NT Server 4.0 is far more useful. (Microsoft Press, One Microsoft Way, Redmond, WA 98052-5399. URL: http://www.mucrosoft.com/products/mspress) TRE MICROTIMES - ALINE 25, 1997

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MULTIMEDIA 101

Welcome To The Coming Age Of Muddled Media—Part 2

Fighting For Convergence

wo tectonic time-plates of broadcasting, the pre-digital and the digital, ran into each other just before NAB '97, the annual convention of the National Association of Broadcasters held in Las Vegas. The resultant series of earthquakes will likely rupture the mediascape for years to come. Convergence in the buzzword for this era of upheaval as television, computand telephones mate and mutate. It sounds almost biological, a natural process, but #3 more like convergence in the sense of armies meeting on the battlefield in clash in bloody confusion. Is you should expect in any arena with even a whiff of computers and media, Microsoft is one of the combatants. The

peculiar sight of NAB '97 was that, in contrast to most computer trade shows where Microsoft is a Gollath, here at a broadcasting trade show Microsoft appeared more as a diminutive David

in me role as David, Microsoft hopes that it and me role as David, Microsoft hopes that it and me role as David Microsoft hopes that it



on Advanced Television Service (CICATS) have fashioned a slingshot out of the influence they exerted upon the rules for the transition to digital broadcasting of television signals. The story of the long road to eventual replacement of the antiquated National Felevision System

In This Section:

Multimedia 101
 Welcome To The Coming Age Of
 Muddled Media—Part 2
 Fighting For Convergence

By Jonathan E
 Virtual Peru
 Being There In Multimedia

Pur Tagu Carazzo

Committee (NTSC) broadcasting standard detours through the mid-80s perceived threatof the Japanese development of High Definion Television (HDTV) before the later emergence of digital signals, multimedia on the Internet, and the current "plans" or "rules" for umplemented digital broadcasting. "Tis an oft' told tale of political dealing and influence peddling that, alons with concomitant technical detail and some appropriate outrage at the dinosaur broadcasting industry's pigging out at the trough of the public arrwaves, was well recounted at some considerable length by Charless Platt in the

wined confluired \$5.02 Inetizerd .

In this column's abbreviated and updated version of the tale, Microsoft and CICATS amed themselves for the future battle by cutting a political deal in November 1996 with the so called Grand Alliance of broadcasters and televation receiver manufacturers. In a letter from Michael J. Sherfock of NBC, acting as the chalfman of the Consumer Electronies Manufacturers Association. Gary J. Shapilo.

February 1997 issue of Wired; you may and

should-read the full story at http://www.

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MultiMedia & BEYOND

MULTIMEDIA 101 continued from page 190

president of CICATS, and Paul E. Misener of intel, to Federal Communications Commissioner Susan Ness, the computer industry side agreed that "neither CICATS not its member companies nor their representatives will directly or indirectly seek to oppose or delay-before the FCC, by judicial review, legislatively or otherwise-final adoption of the positions urged by broadcasters and consumer electronics manufacturers." More crucially, from the broadcasters' financial point-of-view, the letter also stated. "Nor will they support efforts in Congress or elsewhere for aucuoning of spectrum allocated or to be allocated for digital television." In return, it was agreed that "the FCC standard should include language clarifying that data broadcasting is a permitted was under the standard Data broadcasting is defined as the transmission of any type of data other than realtime video and audio programming and, further, that "Video and audio services may be enhanced by providing augmentation data."

in short, while appearing to detail some agreement reached, this deal actually outlines the rules of engagement and what's out-ofbounds. It sets the stage for broadcasting anarchy and a period of intense consumer confusion-although the expression used by FCC chairman Reed E. Hundt in a statement applauding his commission's acceptance of the deal right before NAB '97 is 'a movement away from a command and control policy toward a market orientation for the business of digital television.* This may or may not be a good thing depending on who you are, how old you are, and what you want. It certainly means that as a consumer you should avoid buying a new television, or at least spend the absolute minimum, eschewing screen size and fancy features, until the smoke of battle clears and we can identify and count the dead

THE THRILL OF BRTTLE

In the long view, the advent all digital television (DTV) is the next campaign in the long march of multimedia from esotenchigh end lab toy to ordinary everyday consumer mendum In the broad view, DTV is about breaking the all lab traction of the Internet to an even wider audience It is likely to chrystalize the old debate of mewing the interfaced TV screen from the couch about 8 or 9 feet away versus to discourse 9 and 22 hours of the order of the screen from the couch about 8 or 9 feet away versus to discourse 9 and 22 hours of the order order

viewing the progressive-scan computer screen from a chair a couple of feet away from an academic larva to a marketplace butterfly. The question may even be whether the new bred proputer and media companies will do to traditional broadcasters what the interstate free-way system did to the railways.

Briefly, digital broadcasting can use a lot less spectrum than analog depending on size and resolution of the image if current-quality television images were digitized, compressed and digitally transmitted they would use only one-sixth the bandwidth as they do now. The broad-casting industry liked this fact and immediately figured that TV stations could then use the left-over fixe-sixth of each station's allocated channel for other profitable purposes such as busined.

puter industry, there was the chicken-and or kilfer-app problem. Who would broadcax a any enhanced format until there are received out there? Who will buy an expensive nea IV set when there's no enhanced programming.

The most significant problem with the Grad Alliance's proposal, however, was that the eighteen standards did not include one lor prograstive-scan screens, the very bedrock of modern computer displays. Progressive-scan screens whe creason why computer screens look sharp and have no flicker, thus allowing one to do such basic things as read off them The inordination of the creation of the progressive-scan cast industry's omission of progressive-scan screens may have been because it's unbroken news to that industry that people read ell screens, it may be that they is indeed a bread screens, it may be that they is indeed a bread

Convergence is the buzzword for this EAA OF UPHEAVAL as intevision, computers, and telephones MATE AND MUTATE.

ness data and paging, purposes more private and other than why they were originally granted the use of the public's airwaves. This, of course, did not sit well with some members of the public who felt that the spectrum should be recovered by the FCC and auctioned to the highest bidders or that TV stations should be required to use their original spectrum to improve their picture quality with such enhancements #3 HDTV or even to offer new consumer services made possible by digital transmission. Strangely, some of those members of the public were in the computer industry. Presumably they objected to this potential heist of the public's survaves on principle, but there were also good business reasons for them to do so.

As Platt explains in his article, even after years of trying to come up with a new system the Grand Alliance of the broadcast industry temained conflicted over formats, standards, resolutions, and other technical and business details. The best conclusion it came up with was the non-conclusion of allowing eighteen different broadcasting standards to coexist and requiring TV instrudicturers to build receivers, that could deal with it? Sounds a little like the computer industry doesn't it? And like the com-

cast media conspiracy to keep the gleat unwashed dazzled by spectucle rather than substance, perhaps it had just never heard of convergence, but most likely it was that progressive scan cannot be compressed as much as an interfaced signal and so there wouldnt hard, been is much leftover bandwidth for televalent stations to exploit. Of course, the computer industry had to steen in and begin to skimmsh

What the letter to Commissioner Ness revealed was that in return for not going straight for the broadcasting industry's jugular. Ils reliance on using the public airwaves at min mal cost, the computer industry would be allowed to join the DTV battle with progressive scan its standard. On December 26, 1996, the FCC announced is concurrence with this agree ment to disagree by accepting the suggested "standard" that "allows transmission of one of the High Definition Television programs: four five or more Standard Definition Television programs at a visual quality better than the current analog signal; many CD-quality audio signals and the delivery of large amounts of data The standard does not include requirements with respect to scanning formats, aspect ratios and lines of resolution." On April 3, 1997, the FCC

MultiMedia & BEYOND

MILTIMEDIA 101 continued

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unounced the allocation of spectrum for digiul mannissions to broadcasters, an accelerated shedule for conversion = DTV, and even plans to recover for auction some spectrum no longer used by current broadcasters. In some spap, it's a masterpiece of compromise. In othits, it's an incredible example of Orwelhan Nesspeak, promising all stors of benefits to consumers without acknowledging the downside, which over the next five years or so is likely Diseasers. Cultinas always suffer in war

THE SPOILS OF WAR

When it comes to the conversion from analog to digital broadcasting, it may be, as is said about creation bodily functions in the weightlessness of space, that "There ain't no graceful way" Current TV sets will not pick up digital signals ser top converters should become available but abriously you wouldn't get the full benefits of improved picture or most extra services

Without doubt, you're going to have to invest a further fair chunk of change in your current home theater to watch digitally broadcast television. New digital TV sets will supposedly be available by Christmas 1938 with. Chairman Hundt promises, 'theee of four network-affiliated digital signals in the top the markets by April 1, 1999, roughly at months from now, and three network-affiliated signals in the top thury markets by November 1, 1999, roughly 30 months from now." Ten years from now, all analog broadcasting is scheduled to stop.

In the meantime, Microsoft and other members of CICATS think they have a potent weapon in the war to establish the new standard of progressive scan. That weapon is the computer industry's experience with rapid product development, frequent revision and upgrading, new market development, and freemarket rough and-tumble The theory is that, besides new computers being ready in receive. available as add-ons to older computers Supposedly, traditional consumer electronics companies will am be able to get produce as the shelves me fast as computer companies. It's hand to take this claim seriously, but, according to The Wall Street Journal. Ron Whitter, me Intel the produce that by the year 2000 there will be 100 million computers able as receive DTV compared with only one million.

If that becomes the case, there will obviously be no shortage of "content providers" luning up to produce programming. However, that little old chicken-and-egg problem is still on the road between here and there. Microsoft is attempting mig get around this by both producing new programming for TV, enhanced DTV and the Web, and by producing tools such as NetShow that stream multimedia over the Web and for some integration with broadcast-over-the-art programming. Intel for its part has a process called Intercast that uses the Vertical

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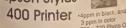


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Virtual Peru

Being There In Multimedia

ccompanying almost every major inuseum show of ancient, classical and ethinic art are sponsored and guided travel fours, available for those pations who want to experience first-hand the environments that gave birth to the worlds great art.

Man) more would go if only the had the time or the money for the trip. Now more museums are turning to virtual reality. "Iravels' through the computer and the World Wide Web to let visitors enhance their experience with a least a bit of the sense of being there."

CONTEXTURLIZATION

Museums have made great progress in contextualization, where the objects of art we placed in the context of the communities that used them and the worlds they inhabited. Curators and designers present collateral and supporting the collateral and supporting the collateral that put a





human face on the cultures the

The Spirit of Ancient Per-Freesures from the Must-Arqueologico Rafael Jan² Herrera." a show as the M H & Young Memorial Mussum San Francisco which runs una August 10, has done just that I was organized by the Pine And Museums of San Francisco

curated by Kathleen Berne FAMSF curator of Art from Africa Oceania and the Americas

You might think that him museums of contemporary art art risking new technologies to enhalte their exhibits, but many classical museums, like the Louvre with "groundbreaking Web site are offer ahead of the pack. Just last year him all the de Young, we saw "virtual Pompeii," remulating the Temple of and the Grand Theater. That edibit was curated by Renee Dreytus, curate of Ancient Art and Interpretations, and Created by Carl Eugene Loeiller, with

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MultiMedia & BEYOND

VIRTURI, PERIL continued from page 204

SIMLAB at the STUDIO for Creative Inquiry at Carnegie Mellon University in Pittsburgh. This immersive exhibit was configured for an audience of about fifty, wearing Stereographics glasses viewing a 3-D projected image of the space as navigated by one person with a trackball and a head-mounted display (HMD).

VIATUAL PERU

At "The Spirit of Ancient Peru," you'll find a very clear and capable "virtual reality tour" of fifteen Peruvian archeological sites and environments where you see click and drag on a Macintosh and everyone in the room can see the results on a wall displayed through a video projector. Instead of the more ambitious and technically "iffy" immersive theatrical VR of "Virtual Pompeii," this time the de Young went with more "CD-ROM-like" self-guided desktop-type VR. This Peru program will be made into a CD-ROM as well.

Finding this VR facility at "The Spirit of Ancient Peru" will take some sleuthing skills, as it is buried out of sight at the far end of the Education Room past the Reading Table. The installation has a kiosk with two Macintoshes a table, one which drives the video projector, and the other which can be independently controlled and has a monitor for its display.

Well-designed pictorial menus bring the viewers into the mapped environments of the sites that nurtured the fascinating variety of

expressive pottery, fabrics and jewelry arrayed in the galleries beyond. The Chavin, Chimu, Huari, Inca, Lambayeque and Moche pre-Hispanic cultures are arrayed in a bar column As you move the cursor over each bar, the sites of that culture are highlighted on the map of coastal Peru with pop-up name labels for each city. Click on the bar, and you are brought to that culture's menu page. There you are presented with the sites, and each site menu shows the nodes on the city map where each panoramic point of view is centered.

SPINNING AT THE TOP OF THE WORLD

Each of the fifteen panoramas is navigated by clicking and dragging the cursor on the screen. You can look all around, tilt up and down, and zoom in and out using the keyboard. The zooms are not high-resolution, so they quickly crumble, but they're effective in expanding the viewer's involvement in the site. The spectacular mountainscapes and skies framing the villages and ancient structures come through wide and clear enough to make your ears pop.

There are seventeen virtual objects in the program that allow you to do what is off-limits in the galleries; you can "handle" the artifacts. All these objects can be spun on their horizontal axes, so you can examine all the surprising details and rich character of treasures like | Double-Spouted Architectural Vessel and the gold Janus cup from Keros.

At "The Spirit of Ancient Peru," you'll find a very clear and capable "virtual reality tour" of fifteen Peruvian archaeological sites and environments where you can click and drag on a Macintosh and everyone in the room can see the results on a wall displayed through a video projector.

PANORAMIC VISIONS

Dr. John W. Rick, associate professor, curator of Anthropology Collections and an archaeologist at Stanford University, had been working in Peru for three years at a site called Chavin de Huantar. He came back with about 150 photo panoramas from there, and then fifty more from other sites. Each panorama was composed from a series of a dozen 35mm photographs using Fujichrome Provia stock and shooting with a 17mm lens mounted on a Kaidan self-leveling panoramic tripod

"I was contacted by curator Kathleen Bernin about the de Young show," says Rick, "and the right resources and expertise came together to make the virtual reality aspect part of the

The project in a collaboration of Live Picture, the Fine Arts Museums, and Dr. Rick; it took the work of two or three people for a month and a half. Live Picture provided the funds for digital picture processing; it also donated \$5,000 worth of equipment to the Museum for the kiosk med display, well as technical support and programming. It also produced the finished presentation. Live Picture's Eric Froehlich, content designer, did the interface design.

Jonathan Ledergerber, content engineer at Live Picture, explains: "The actual presentation is running in Macromedia Director. Our Xtra for Director allows Director developers to use our RealVR technology within that environment did the Director programming."

The RealVR technology is the combination of panorainic image viewing with IMOBs (Image based objects) which are very similar to QuickTime VR Object Movies. PhotoVista in Live Picture's panorama stitching program, FlashPix Is image format which allows you to bring higher resolution data and serve it wer the

A LEGION OF MEDIA

As assistant to the director of the Fine Aris Museums. Dakin Hart is the point man for all of their high technology projects. He did all the actual linking of the panoramas and the Peru program itself

He is also responsible for the Web site, where you will find information and visuals of the Peru exhibit as well as "Art of the Americas: Oultural Crosscurrents Virtual Gallery." This page, found





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MINITIMEDIA 101 continued from page 201

Blanking Interval between video frames to transmit data to the desktop. This works even with analog signals and cable, requiring only a TV tuner card and software costing between \$99 and \$150. MTV broadcasts two hours a day of Intercast programming while its second channel, M2, is already 24/7

These are early days yet but what we're seeing is a lunge by Microsoft and Intel as grab the audience of tomorrow. Given the peculiar position that television has in American culture and family life, there are a lot of wild cards out there that haven't been addressed yet. Plenty could go wrong from any player's position. Although it seems unlikely, Microsoft's purchase of WebTV could be overturned by the Justice Department. Chairman Hundt's promise of how many stations will have made the switch to DTV by November 1, 1999 could be judicrously optimistic. The American public could flat-out refuse to spend thousands of dollars replacing their analog sets, choosing instead to spend

their viewing time endlessly watching old movies on the VHS VCR. DVD could be a hit or not. There's always the tussle over who has the remote-when the remote becomes a mouse will everyone retreat to their own private set? How does cable fit into the picture? Will cablemodems and services like @Home become significant players? What about satellites? And Microsoft has plans for over 800 of those! Ultimately, there's a question over whether tomorrow's audiencé will prefer the directed and limited world of professionally produced media, which by its market definition can only have many players, or the wide-open amateur spaces revealed by such developments as 'zines, pirate radio, and the Web, which can have a virtually limitless number of producers.

I make two fearless predictions: If you're over 10 years old today, don't worry-you're not a target

in this war, you're already over the hill These developments will take a good long time to roll out whatever the FCC says. Having left the deasions withe marketplace, the war over technical standards could rage first way and then lie other almost indefinitely. The short-term battle is to determine the media habits of today's under-10s and success there will be the founda tion of long-term future success. Secondly, the first truly great artistic work of interactive mid timedia will be a remake of "Citizen Kane" with Bill Gates in the role originally played by Orson Welles. Oh, and a third one: This column will return to this subject.

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Ten years from now, all analog broadcasting is scheduled to STOP.

MultiMedia & BEYOND

VIRTUAL PERU continued from page 238

the Fine Arts Museums site, has the link to Live Picture so you load the RealVR Traveler plug-in enabling you to navigate the panorama in this Webtop VR.

"My next project," says Hart, "is to do the Virtual Legion of Honor. The idea will be to offer what in some ways will be better than the actual museum. We'll offer a virtual manorama m cach room. Every object will lie clickable and spinnable. The ceilings of the rooms will be

art are risking new technologies to enhance their exhibits,

but many classical museums, like the Louvre with its

fully-viewable spheres. We'll link all that in with some portion of our database that will allow you to go from one object to find and examine other related objects that are in the collection. We will make this into a CD-ROM and then we'll make some pages on the Web, either as a skeleton version, or we'll do a couple of complete galleries as highlights. We may also just turn it into a completely virtual thing in the Web and create a VRML gallery of highlights from the You might think that only the museums of contemporary

collection. We will experiment with different approaches "

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Calendar Of Events

Conferences, Shows, Special Events

June

June 19-21 Electronic Entertainment Expo (E3). Atlanta, GA. IDSA. Contact: 1-800-315-1133, or URL: http://www.mha.com/e3/.

June 21–22 Computer Fair. Boulder Sahara Swap Meet, Las Vegas. National Productions. Contact: 1-800-800-5600.

June 21-22 Computer Super Shows. Glendale Civic Auditorium. Super Show Productions. Contact: (714)459-6105.

June 23-27 ATM Year '97. San Jose. Contact: 1-800-200-4884 or URL: http://www.tticom.com/atmyear97.

June 26-28 MacHack Conference, Dearborn, ML Contact URL http://www.machack.com/97/ June 28-29 Computer Fair, Fairplex Expo Center, Pomona National Productions Contact 1-800-800-5600.

June 28–29 Computer Super Shows, Riverside Convention Center, Super Show Productions Contact: (714)458-6105.

June 30-July 2 Potlatch National Educational Computing Conference (NECC). Scattle, Wa Contact. 1-800-280-6210. necc97@wce.www.edu.. = URL: http://wce.www.edu/necc97

July

July 2 How to Build Maintain a Profitable Consulting Practice. Woodland Hills The Center for Consulting and Professional Practices Contact (310)324-2386, or wmooneys@intercontern

July 8 Computer Super Shows. San Bernardino Nat'l/Orange Show Faltgrounds Super Show Productions Contact (714)459-6105

July 12 Computer Fair. Sherman Square

JUNE 23

BMW CyberDrive

A joint Internet effort from Apple Computer, Inc., and BMW of North America, Inc., BMW CyberDrive begins on June 23 and will allow computer users to experience some of the world's greatest wonders via their Web browsers and possibly win valuable prizes in the same time. The BMW CyberDrive will provide "test drives" through twenty-one internet destinations such as a journey on the Trans-Siberian railroad, a Napa Valley balloon ride, a roll over some of the world's greatest rollercoasters and even the opportunity to design a golf course, Powered by Apple technology, the twenty-one Web sites will feature movies, animation, and innovative games and activities. Participants can also search for prizes such as an Apple eMate 300, an Apple MessagePad 2000, an Apple Power Macintosh 6500 Creative Studio, or the grand prize of a one-year lease of a BMW Z3 roadster plus an Apple Twentieth Anniversary Macintosh. The BMW CyberDrive will be online for four weeks. To participate or to learn more, contact http://www.bmwusa.com

JUNE 28-29

Computer Fair

Produced by National Productions, Inc., for over thirteen years, Computer Fair (formerly Computer Marketplace) covers 100,000 square feet with over 300 exhibits featuring multimedia systems, notebook computers, software tutes, modems, and other peripherals at discoura programmers, and the peripherals at discourance of the computer o

Entertainment Center, Reseda National Productions. Contact: 1-800-800-5600 July 13 Computer Fair, Seguoja Conference

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July 19–20 Computer Fair, Fairplex Expo Center Pomona, National Productions, Contact 1-800-800-5600, July 26 Computer Super Shows, Glendale Com

Auditorium. Super Show Productions. Contact (714)459-6105. July 26-27 Computer Fair. Henderson

Convention Center, Las Vegas National Productions. Contact: 1-800-800-5600. July 27 ACP Computer Swap Meet. Santa Ana

ACP Superstore: Contact: (714)558-8813.
July 27 Computer Super Shows. Riverside
Convention Center. Super Show Productions
Contact: (714)459-6105.

August

August 2 Computer Super Shows. California State University, Long Beach. Super Show Productions. Contact: (714)459-6105.

August 9-10 Computer Fair, Fairplex Expo Center, Pomona. National Productions Contact 1-800-800-5600

August 10 Computer Super Shows. Riverside Convention Center Super Show Productions Contact: (714)459-6105

August 16 Computer Fair, Earl Warren Showgrounds, Santa Barbara National Productions Contact: 1-800-800-5600

August 20-23 ISPCON '97 (Internet Service Provider Convention). San Francisco Contest 1-800-933-6038, or URL http://www.ispcon.com

August 23-24 Computer Fair, Sherman Square Entertainment Center, Reseda National Productions Contact: 1-800-800-5600

August 23–24 Computer Super Shows. Orange County Fairgrounds. Super Show Productions Contact: (7):41459-6165

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turn right. Turn left on White Avenue to Gate 14.

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July 12 RESEDA Sherman Square Entertainment Center From the 101 Freeway take and offramp, go north to Sherman Way and turn right, Go one block to Canby Street 18430 Sherman Way.

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August 30-31 Computer Fair, Fairplex Expo Center, Pomona. National Productions. Contact: 1-800-800-5600

September

September 8-11 Electronic Commerce World. Philadelphia, PA. Contact: 1-800-336-4887.

September 9-11 Internet Commerce Expo-(ICE) Conference Program. Los Angeles. IDG. Contact: 1-800-667-4423, or URL: http:// www.idg.com/ice

September 13 Computer Fair, Sherman Square Entertainment Center, Reseda. National Productions. Contact: 1-800-800-

September 14 Computer Fair, Sequoia Conference Center, Buena Park. National Productions. Contact: 1-800-800-5600.

September 14-17 ICSPAT/DSP World 1997. San Diego. Contact: Denise Freeman, (415)278-5231, dsp@exporeg.com , or URL: http://www.dsp world.com

September 15-17 ICSPAT/DSP World 1997. San Diego. Miller Freeman, Inc. URL http://www.dspworld.com

September 15-18 IT Forum '97, New York, NY, Contact: 1-800-232-3976, or URL: http://www. itforum.com

September 20 Computer Fair, Earl Warren Showgrounds, Santa Barbara National Productions. Contact: 1-800-800-5600.

September 27-29 Computer Fair. Henderson Convention Center, Las Vegas, National

Productions Contact: 1-800-800-5600 September 29-October 2 Embedded Systems Conference, San Jose, Miller Freeman, len Contact: URL: http://www.embedsyscon.com

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June 22 HTML Basic Web Designing, Long Beach, Megabyte CoffeeHouse, Contact; (562)986-6892, or URL: http://www.laba.nex.com/litml

June 24 Hands-On Beginning Mac. Santa Monica. LAMG. Contact. (310)319-1821.

June 24 World Wide Web: A Hands-On Introduction, Fullerion, Cal State Fullerton Extension, Contacts (714)773-2611.

June 25 Low Stress Computing, Santa Montea. LAMG, Contact: (310)319-1821.

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June 25 Hands-On Director, Santa Monica.

LAMG, Contact: (310)319-1821

June 26 Creating Your Home Page For The World Wide Web, Fullerion, Cal State Fullerion Extension, Contact: (7)41773-2611

June 28 Intro to Windows 95, Long Beach, Megabyte CoffeeHouse, Contact: (562)9866892, or URL: http://www.megabytecoffee.com/. June 29 HTML Advanced Web Designing, Long Beach. Megabyte CoffeeHouse. Contact: (562)986-6892, or URL: http://www.labanex. com/html.

June 30-July 9 Advanced Adobe Illustrator 6.0. Fullerton. Cal State Fullerton Extension. Contact: (714)773-2611

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July 12 Internet Workshop for Beginners. Long Beach. Megabyte CoffeeHouse. Contact: (562)986-6892, or URL: http://www.megabyte. coffee.com/

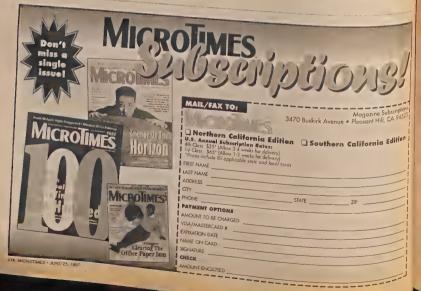
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July 19 Adobe Photoshop 4.0 Class. Long Beach Megabyte Coffee House Contact (562)986-6892, or URL http://www.megabya coffee.com/

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AUG. 16-17



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Wireless In Ulaan Bataar continued from page 140

called FreeWave Technologies, Inc. (http://www.freewave.com/). They make a spread-spectrum radio that can send data at 170Kbps over the air and interfaces to a computer via a serial data interface (RS-232) # 115.2 Kbps. The radio operates in the 902-928MHz part of the spectrum, one of three bands utilized by Part 15 devices in the US. These radios put out 1 watt of power, using various antenna configurations we have been able to obtain/send data with them distances of up to 60 miles. (For more information on the use of these sorts of unlicensed spread-spectrum radios, check out our WFT project Web site at http://wireless.oldcolo.com/).

We learned that the 902-928MHz band was not completely available for our use in Mongolia, since the commercial cellular telephone nerwork there used GSM technology which operated in a portion of the band from 902-915 MHz. In order to use the FreeWave radios in Mongolia, we had to make two things happen.

We first got DataCom to obtain from the Mongolian government permission to operate the radios in the 915-928MHz part of the spectrum, avoiding the conflict with the GSM cellular network. We next got FreeWave to provide us with a special version of their radio which would operate in this smaller portion of the 902 MHz band. As it turns out, this was not difficult-they had already encountered the same problem when they first entered the Australian market, which uses GSM cellular in the same band

In order to connect each site's radio to the local LAN we determined that we needed a low-cost Internet router that could be installed and maintained at each location. For the WFT project, we had already developed such a router based upon the widely available Linux operating system and a low-cost PC. We decided to use this approach in Mongolia, as we already had a great deal of experience with this router and an attached FreeWave radio. Aside from Linux, all # PC needed to function as a special purpose IP router was a high-speed serial card that would support an interface speed of 115.2Kbps and enough RAM to allow Linux III function properly (in this case we used 16MB).

Also important were the antennas and feedlines, it was clear that we needed an omni-directional antenna for the DataCom site, since in was the point-of-presence (POP) for all internet services and each remote site would have to connect to it. For the remote sites, we would require a directional antenna that could focus all of the available ener-

Although the distances involved in the Ulaan Baatar network would be a good deal less than we had been used to in the US (average about 20 miles), we decided to use the same high-gain omni and directional antennas that had used here rather then taking the time to find lowergain alternatives—it's better m have more antenna gain than you need than m get there with less and find out that you need more. We also decided in the same low-loss coax feedline (LMR-400) to connect the radio m the antenna that will had been using in the WFT project.

Even with all the up-front analysis of each site's requirements, we still had no idea of the exam amount to feedline that we would require As a result, sow decided to take three times as much as we thought we'd need Finally, there was the issue of electrical power. In Mongolia, they use

220 VAC, we had to obtain the necessary power adapters and connectors to insure that the radios and routers could all operate mi local AC power As it's common practice with an expedition of this sort to a remote

part of the world, we made sure that we had spares for all of the key equipment, especially routers and radios. When it came to just how we were going to get all of the equipment to Mongolia, the NSF intervened 238 MICHOTIMES - AINE 25 1997

Resources

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PROGRAMMING

DS/2 Programming Special Interest Group Meetings, 3rd Sal., 11:00 am, 600 Anton Blvd , 2nd floor (at Avenue # Arts). Costa Mesa Free parking Contact Terry Warren (714)633-5467 [Exp.#169]

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Microsoft Windows HT Study Group, Meetings: 2nd and 4th Sat , 6:00 pm, MicroLAN Technolopies, Inc., 110 N Vincent Ave., West Covina, A professional association of Windows NT enthusiasts to enhance our skills. knowledge, and career opportunities. Contact Manmohan Bharma (818)339-1391 [Exp.#166]

Power Graphics User Helwork (PGUN). Meetings, last Tues . 7:30 pm. Glendale Windowsbased graphics and pub-Hishing applications (CoreJDRAW, Ventura Publisher

ninuas Contact Randy Tobin (818)955-5830 (Exp #169.)

ASSOCIATIONS

Southland Association of Information Technology Professionals, Meetings 3rd Wed., 6 30 pm. Galeway Plaza Hollday Inn. 14299 Valley View. La Mirada (I-5 at Valley View exit) A professional association providing new technology, management topics, networking, and education to the Orange County/L.A. area Contact Cathy Grammer-Margolin, (714)647-1617 ## 645-5950, URL

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Independent Computer Consultants Association. Meetings 2nd Thurs . 600 pm. Sportsman's Lodge. 12825 Ventura Blvd Studio City An organiza tion promoting profession alism, expertise and ethics in the provision of comput er services and awareness of the availability of such services by independent professionals Call Ben Shulman, (213)872-1911 [Exp #166.]

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and made arrangements with the US ambas sador in Mongolia that allowed in to ship everything via diplomatic channels (the famous "diplomatic pouch") Thus we were able to avoid the normal problems encountered using commercial shipping firms and dealing with customs procedures

i turns and that spread-spectrum radios cannot be exported to countries such an Mongolia without a special export permit from the US government. Obtaining such a permit can take anywhere from three to sum months. As we were trying to get the expedition completed before the harsh Mongolian winter started (December-March) we were fortunate in being able is bypass that requirement by shipping the radios the way that we did.

The downside in using the diplomatic channel for shipping is that once you put your shipment into the system, you only have a rough idea when it m going to arrive at its destination. Thus we had to use estimates on the time it took other items to arrive in Mongolia in the basis for determining just when the expedition team itself should arrive. As it turned out, we were lucky in that most of the equipment arrived before we arrived in Mongolia, with the exception of a few pieces that arrived after we had been in-country about a week

Installation

A team consisting of Glenn Tenney (of Fantasia Systems, San Mateo) and myself left for Mongolia m October of last year After we had arrived, made the initial visit to DataCom, and inventoried our equipment that had arrived (except for the few missing items), the first order of business was to survey all of the chosen sites in order iii determine just what would be needed in deploy the equipment.

We were shocked ## find that DataCom was surrounded by high-rise buildings that effectively blocked line-of-sight to all of the sites where installations were to have taken place. One of the key factors in gening this type of low-power radio work properly w us have a clear line-of-sight path to any focation that you wish se contact Without major obstructions, it is possible to establish communications over foirly long distances, with obstructions it is usually not possible go more than a few hundred feet. Given what we was from the DataCom site, it looked like itwas time to much things up and get on the way. back home. However, we decided as make the best in a bad situation, attempt in proceed any way, and see just what could the accomplished

First, we installed the first radio and router at the DataCom site. In order to maximize the power output to the unterma from the radio res mount-242 MICHOTIMES - JUNE 25, 100

ed the radio on the roof of the building just a few feet from the antenna = a small equipment shed This approach allowed us to use just a short coax feedline to the antenna and then a rather long serial-data cable to the router which was on the secand floor of a four-story building Since this location was the main hub for the wireless network we used an omnidirectional antenna.

Mineless

We next set up a mobile radio so that it could be powered by batteries and carried about in a car with one of the directional antennas. We decided that we wanted to travel around town and see if it was possible to receive the signal at any distance from the POP location. To our surprise, we were able to get a good signal at most of the sites where we were to have installed a radio-all without having line-of-sight to the POP. After some analysis, we were able to determine that even though Ulaan Baatar is populated with a large number of high-rise buildings, the materials used in their construction are such that they appear to be effectively transparent at the frequency of the radio emissions that we were using. This windfall allowed us to proceed with installation at each site as planned

The most difficult part of the installation is the proper placement of the antenna and its connection to the radio. The major goal is to minimize the length of feedline used to connect the radio to the antenna-the basic rule being that the longer the feedline, the less power actually gets to the antenna, and hence the lower the signal quality at the remote location. This is where we spent most of our time during the next two and a half weeks. Each site had to be surveyed: then we had to work with the local people in charge of that site to convey to them what needed to be done and make were that the proper permissions were obtained iii do the work

At some sites, nothing major was required, as the antenna and the radio/router ended up being in the same room. In other sites, such as the US Embassy, the antenna had to be mounted on the roof and feedline run several floors to get to the radio and the router. Once the site preparation was complete, it was a very simple matter to install the radio and router.

One major problem developed, once we were over the site preparation issues and got to testing the radios. We found the PCs we selected were unable to have their serial ports run at speeds over 19.2Kbps without data overruns; as as we tried to send data so the radios as any speed over 19 2Kbps, nothing worked After a few days spent in investigating the cause of the problem, we discovered that even though the technical specifications of the PCs indicated that the on-board serial hardware

could be run at speeds up to 115.2Kbps this was not the case. DataCom has some new Pentium PCs that arrived while we were there intended for a public internet access center When we installed Linux on those machines configured it as a router, and set the serial interface to the 115.2Kbps speed everything functioned properly

As luck would have it, we were able to contact someone coming over from the US to Mongolia This person brought the necessary number of high-speed serial cards over, we were able to install them in the PCs that we had and get them to function properly at the higher datarate. As a result, we were finally able to leave Mongolia, after a slightly longer stay than we'd planned, with the wireless network installed and good connections to the

The network that we installed is still up and running today. The staff at DataCom has been able to maintain the network and even extend it with additional sites

Lessons Learned

Here is a summary of some of the key things we learned as a result of this effort

· A good site survey ahead of installation is the key to the installation's success. The specifics of a survey require people with a good deal of expertise in several areas. If you can't get those people to the site ahead of time to perform the survey, success can be in serious doubt in such remote locations as Mongolia

. Always make sure that you test the equip ment that you're using before you ship it to a remote location. Never believe the specifications for a product until you've tested it yourself!

· Radio is still something like a black art (i.e. magic) There is always something new to be learned Until we had gone to Mongolia and did this installation, we would have never believed that you could deploy such a wireless network in a dense urban area without having line of sight to all locations

· Low-cost spread-spectrum radio products that are being used in increasing numbers in the US to deliver access to the Internet can be successfully deployed in developing countries with limited expertise in both radio and Internet technologies

In closing, we'd like in take this opportunity acknowledge the help and assistance of Steve Goldstein of the NSF, without whose caring and wisdom this effort would not have been possible

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This column salutes

the best Net Humor that floated around the Internet last year. I've observed that this year's material is simply not as good. Most people on the Net become part of a giant joke transference. system, and many of these gags have passed through thousands of desktops.

Here are a couple of items to which I present the MicroTimes Best Humor Award. Will the authors please claim the award!

Most Useful Humor

The first award goes to a posting of useful dumb quotes that can spruce up any speech, to wit: "Computers in the future may weigh no more than 1.5 tons."

Popular Mechanics, forecasting the relentless march of science, 1949

"I think there is a world market for maybe five computers."

Thomas Watson, chairman of IBM, 1943 There is no reason anyone would want a

computer in their home." -Ken Olsen, president, chairman and

founder of Digital Equipment Corp., 1977 The concept is interesting and well-formed, but in order to earn better than n 'C,' the idea

A Yale University management professor in response to Fred Smith's paper proposing reliable overnight delivery service. (Smith went on to found Federal Express Corp.)

Who the hell wants to hear actors talk? -H.M. Warner, Warner Brothers, 1927

'I'm just glad it'll be Clark Gable who's falling on his face and not Gary Cooper."

Gary Cooper on his decision not to take the leading role in Gone With The Wind.

"We don't like their sound, and guitar music is on the way out." -Decca Recording Co. rejecting the Beatles, 1962

Heavier-than-air flying machines are impossible."

Lord Kelvin, president, Royal Society, 1895. "So we went to Atari and said, 'Hey, we've got this amazing thing, even bulls with some of your parts, and what do you think about fund MICROTIMES - MINE 25 1997

ing us? Or we'll give it to you. We just want to do it. Pay our salary, we'll come work for you.' And they said, 'No.' So then we went to Hewlett-Packard, and they said, 'Hey, we don't need you, You haven't got through college yet."

-Apple Computer Inc. founder Steve Jobs on attempts to get Atari and HP interested in his and Steve Wozniak's personal computer.

Professor Goddard does not know the relation between action and reaction and the need to have something better than a vacuum against which to react. He seems to lack the basic knowledge ladled out daily in high schools."

1921 New York Times editorial about Robert Goddard's revolutionary rocket work

Stocks have reached what looks like a permanently high plateau." -Irving Fisher, Professor of Economics, Yale

Everything that can be invented has been invented."

-Charles H. Duell, Commissioner, U.S. *Office of Patents, 1899.

"Louis Pasteur's theory of germs is ridiculous fiction"

-Pierre Pachet, Professor of Physiology at Toulouse, 1872

"640K ought to be enough for anybody." - Bill Gates, 1981

Numerous so-called quotes were removed from this list because there was no genuine attribution. Those kinds of quotes tend to be pure folklore.

Best Analogy-Type Net Gag

This type of joke comes around each year and is derived from the old gags designed around a doll. You know—"If IBM made a doll it would run Cobol. Or if you wound it up it would move to Armonk." That kind of thing.

This is the famous Toasters loke that ran around the Net last year, Will the author please

If IBM made toasters...

They would want one big toaster where people bring bread to be submitted for overnight toasting IBM would claim a worldwide market. If Microsoft made toasters...

Every time you bought a loaf of bread, you would have to buy a toaster. You wouldn't have to take the toaster, but you'd still have to pay for it anyway. Toaster 95 would weigh 15,000 pounds (hence requiring a reinforced steel counter top), draw enough electricity to power a small city, take up 95% of the space in your kitchen, would claim to be the first toaster that lets you control how light or dark you want your toast to be, and would secrelly interrogate your other appliances to find out who made them. Everyone would hate Microsoft toasters, but nonetheless would buy them since most of the good bread only works with their toasters.

If Apple made toasters...

It would do everything the Microsoft toaster does, but 5 years earlier. If Xerox made toasters...

You could toast one-sided or double-sided

Successive slices would get lighter and lighter The toaster would jam your bread for you. If Radio Shack made toasters...

The staff would sell you a toaster, but not know anything about it. Or you could buy all the parts to build your own toaster.

If Oracle made toasters...

They'd claim their toaster was compatible with all brands and styles of bread, but when you got it home you'd discover the Bagel Engine was still in development, the Croissant Extension was three years away, and that indeed the whole appliance was just blowing smoke.

If Sun made toasters ...

The toast would burn often, but you could get a really good cup of Java

Does DEC still make toasters?-They made good toasters in the '80s, didn't they

If Hewlett-Packard made toasters. They would market the Reverse Polish Toaster.

which takes in toast and gives you regular bread Send in your nominations for the Net loke of the Year Awards. Put me on your "A" list for great Net humor at dvorak@aol.com . Also visit hstp://www.dvorak.org. .

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